

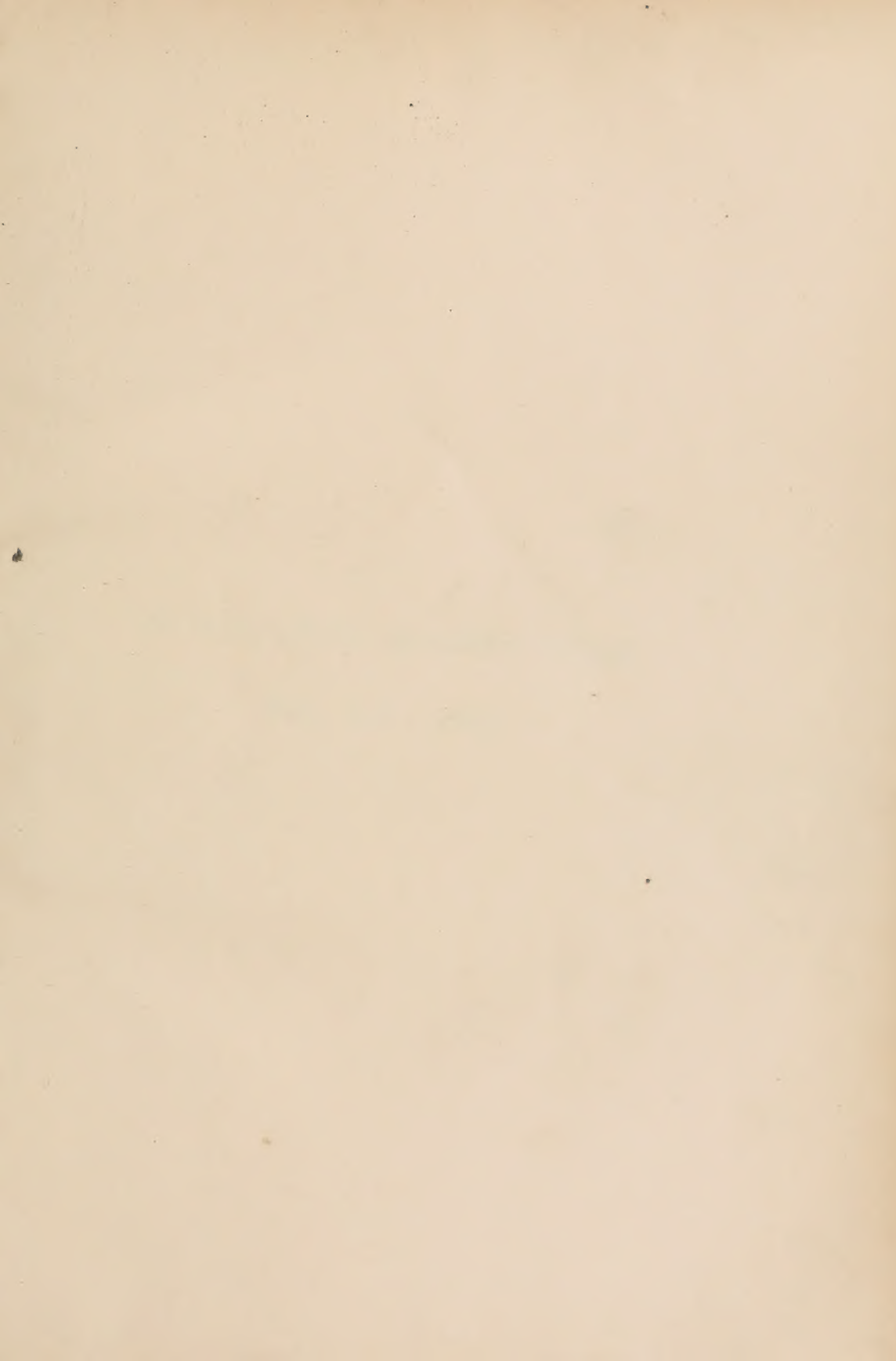






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NOVITATES ZOOLOGICAE.

Vol. XII., 1905.

NOVITATES ZOOLOGICAE.

A Journal of Zoology

IN CONNECTION WITH THE TRING MUSEUM.

EDITED BY

THE HON. WALTER ROTHSCHILD, PH.D.,

DR. ERNST HARTERT, AND DR. K. JORDAN.

VOL. XII., 1905.

(WITH FOURTEEN PLATES.)



ISSUED AT THE ZOOLOGICAL MUSEUM, TRING.

PRINTED BY HAZELL, WATSON & VINEY, LD., LONDON AND AYLESBURY.

1905.

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ERRATA.

Page 237, line 15 from bottom, read **pallida** instead of *griseascens*.

„ 502, the bottom line should read: three forms.

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NOVITATES ZOOLOGICAE.

Vol. XII.

JANUARY, 1905.

No. 1.

A LIST OF THE MAMMALS COLLECTED BY THE HON. N. C. ROTHSCHILD, THE HON. F. R. HENLEY, AND MR. A. F. R. WOLLASTON IN EGYPT AND THE SOUDAN IN JANUARY, FEBRUARY, AND MARCH 1904.

By HAROLD SCHWANN.

SEVERAL of the species mentioned in this list—notably *Acomys witherbyi*, *Gerbillus pygargus*, *Dipodillus watersi*, *Lepus isabellinus*, and *Hystrix curieri*—have not been taken hitherto in so northern a locality, and their range must accordingly be extended.

A few notes supplied by Mr. Rothschild on some of the less-known localities, where specimens were obtained, will be a great assistance in properly understanding their geographical relationships.

Nakheila, where the battle of the Atbara was fought, is about fifty miles up the Atbara River, on the north bank.

Merowe and Kerma are both in the Dongola Province. The former is at the commencement of the fourth cataract, while the latter is the terminus of the railway from Wady Halfa to the Dongola Province.

Shereik is a railway station at the little-known Abu Haschim cataract, some fifty miles south of Abu Hammed.

1. *Hipposiderus tridens* Geoff.

♂ 2; ♀ 1. Abou Simbel.

2. *Scotophilus schliefferi* Peters.

♂ 73. Nakheila.

3. *Pipistrellus kuhlii* Natt.

♂ 3. Shereik.

4. *Taphozous perforatus* Geoff.

♂ 118, 119, 124, 125, 129; ♀ 126, 127, 128. Kerma.

This species was extremely common at Kerma, hiding by day in the dome of an old tomb.

5. *Rhinopoma cystops* Thos.

♀ 155, 156. Merowe.

Six specimens in spirit.

6. *Erinaceus aethiopicus* Ehrenb.

♂ 74. Nakheila.

7. *Erinaceus auritus* Gm.

♂ 184. Natron Valley.*

8. *Felis ocreata* Gm.

♀ 38. Nakheila.

♂ 172. Merowe.

Should further material show that the cats from this region differ from those of Northern Abyssinia, they would have to bear the name of *maniculata* given by Temminck to a specimen from Ambukol in 1824.†

9. *Genetta dongolana* Hempr. & Ehrenb.

♂ 85. Kerma.

10. *Herpestes albicauda* Cuv.

♂ 11 ; ♀ 12. Shereik.

♀ 135, 144. Merowe.

♂ 96. Kerma.

These specimens show very well the variable character of the colour of the tail in this species, which is as often black as white.

This fact, even now not generally known, was pointed out by Mr. Oldfield Thomas as long ago as 1882.‡

11. *Vulpes vulpes aegyptiaca* Sonn.

♂ 95, 99, 100, 107, 110 ; ♀ 98, 108, 109. Kerma.

♀ 149. Merowe.

The only adult specimen, No. 149, is rather paler than the foxes obtained at Shendi by Mr. Rothschild on a previous trip, but is probably nothing more than a slight variation from the usual form. Should the Dongolan fox prove different to the form found in Lower Egypt, it will have to bear the name of *V. sabbar* given by Hemprich & Ehrenburg.§

12. *Tatera robustus* Cretzschm.

♂ 28, 29, 33, 65 ; ♀ 32, 39, 69, 70. Nakheila.

13. *Gerbillus gerbillus* Oliv.

♂ 81, 91. Kerma.

♀ 141. Merowe.

* The Natron Valley specimens were collected by an Arab trapper, and therefore the *exact* locality in the Natron Valley where they were secured cannot be stated.

† Temm., *Mon. Mamm.* p. 128.

‡ *P.Z.S.* 1882, p. 77.

§ Hempr. & Ehrenb., *Symb. Phys.*, Mamm. Dec. ii. 1832.

14. *Gerbillus pygargus* Cuv.

♂ 83, 89, 90, 97, 116, 130; ♀ 84, 86, 87, 115. Kerma.

♂ 16; ♀ 13, 14, 15. Shereik.

♂ 143, 159; ♀ 160. Merowe.

♂ 27; ♀ 64. Nakheila.

The occurrence of this species at Kerma (Dongola Province) would warrant its being regarded as an Egyptian mammal proper, according to the lines of Anderson's *Mammals of Egypt*.

15. *Gerbillus tarabuli* Thos.

♂ 181, 182, 183. Natron Valley.

16. *Meriones schousboei* Loche.

♀ 40, 41, 44. Nakheila.

♀ 4. Shereik.

♀ 122. Kerma.

When several series from different localities on the north coast of Africa have been obtained it will probably be possible to split this difficult species into its local races, but at present the available material is insufficient.

It is worthy of notice that this species has not been found in Egypt previous to this expedition.

17. *Meriones* sp.

♂ 175, 185. Natron Valley.

These specimens appear to be the young of the species determined by Mr. de Winton* as *M. crassus sellysii* Pomel.

18. *Dipodillus watersi* de Wint.

♂ 137, 142, 148, 150, 152, 154, 157, 158, 163, 164, 166, 168, 169, 170. ♀ 133, 138, 145, 147, 151, 153, 161, 162, 165, 167, 171. Merowe.

♂ 104; ♀ 103, 105. Kerma.

♀ 7. Shereik.

The occurrence of this species in the Dongola Province would, according to Anderson's *Mammals of Egypt*, warrant its being regarded as a true Egyptian mammal.

19. *Pachyuromys duprasi natronensis* de Wint.

♂ 176, 178; ♀ 77. Natron Valley.†

* *Nov. Zool.*, vol. x. August 1903, p. 284.

† *Nov. Zool.* 1903, p. 285.

20. *Mus musculus gentilis* Brants.

♂ 111 ; ♀ 112, 113, 114. Kerma.

♂ 173. Assouan.

♂ 146. Merowe.

21. *Acomys witherbyi* de Wint.

♂ 25, 47, 72, 80 ; ♀ 26, 71. Nakheila.

♂ 123 ; ♀ 101. Kerma.

♂ 17. Shereik.

♀ 132, 140. Merowe.

At first sight these specimens appear to fall into two distinct groups, the one fawn and the other slate-coloured ; but a comparison with the British Museum's series of skins makes it evident that they must for the present be considered as one species, owing to the amount of intergrading that takes place.

As the fawn appears to be the more dominant colour, and they are all topotypes of de Winton's *witherbyi*,* it seems best to refer the slaty specimens also to this species until sufficient material is obtained to settle the question of the value of colour as a character in the genus *Acomys*.

The relationships of *Acomys witherbyi*, *hunteri* and *dimidiatus* are, according to Mr. W. E. de Winton,† as follows :—

A. witherbyi is the smallest of the three, and less brightly coloured than *A. hunteri*. The latter is of a red fawn-colour above, with the underparts pure white, and is distinguished from *A. dimidiatus* by its shorter ears and hind feet.

22. *Arvicanthis testicularis* Sund.

♂ 31, 34 ; ♀ 35, 52. Nakheila.

♂ 10 ; ♀ 5, 6, 8, 9. Shereik.

♂ 136. Merowe.

♀ 120. Kerma.

23. *Jaculus jaculus* Linn.

♂ 82, 121 ; ♀ 88. Kerma.

♂ 179, 180. Natron Valley.

24. *Hystrix cuvieri* Gray.

♀ 36 ; 0, skull only. Nakheila.

Owing to the difference in size between the skulls of the South European porcupines and those of the present collection from Upper Egypt it seems advisable to adopt Gray's name of *cuvieri*, as suggested by Mr. de Winton.‡

Skull No. 36 is considerably larger than No. 0, and bears some resemblance to *H. galeata* Thos. : but until more material is obtained, the question of whether the two species occur together must be left undecided.

* *Nor. Zool.* vol. viii. December 1901, p. 400.

† *Nor. Zool.* vol. viii. pp. 400—401.

‡ *Zoology of Egypt*, p. 313.

It may be noticed that porcupines have not been recorded until now from a locality as far north as Nakheila.

25. **Lepus isabellinus** Cretzschm.

♂ 43, 45, 48, 49, 54, 61, 66, 77 ; ♀ 50, 51, 57, 58, 67, 68, 78, 79. Nakheila.
19, 93, 134 ; ♀ 117, 131. Kerma.
♂ 132 ; ♀ 20, 92.

I cannot see that the hares enumerated above differ sufficiently from the description given by Cretzschmar to necessitate passing over the earlier name in favour of *aethiopicus*.*

The range of *Lepus isabellinus* is now known to extend at least from Shendi to Kerma (that is, in the Soudan), where it is apparently the only species ; but whether it ranges as far south as Khartoum, or is found as far north as Wadi Halfa, is at present unknown.

26. **Oryctolagus** sp.

♂ 174. Fayoum.

27. **Gazella isabella** Gray.

♂ 24. Head, skin and skull, 00 ; skull only, 21. Nakheila.
♀ 22, 23 ; 42 juv.
♂, 18 juv. Shereik.

28. **Gazella soemmerringii soemmerringii** Cretzschm.

♀ 30. Head, skin, and skull, 000. Nakheila.

29. **Equus asinus africanus** Fitzinger.

♂ 37, 59, 60. Nakheila.

This wild ass has already been dealt with by Mr. Lydekker in the *Novitates Zoologicae*, vol. xi. p. 593 (1904).

* *Zoology of Egypt*, p. 321.

NEW SPECIES OF *THYRIDIDAE*, *URANIIDAE*, AND
GEOMETRIDAE, FROM THE ORIENTAL REGION.

By W. WARREN, M.A., F.E.S.

FAMILY *THYRIDIDAE*.

1. *Canaea hyaena* spec. nov.

Forewing: grey on an ochreous ground, covered with short striae of darker grey between the veins and crossed by several obscurely marked dark grey lines; the ochreous ground-colour appears only along the costal edge, which is marked with dark grey dots and beyond middle with three dark streaks, and along hind-margin at base of fringe, which is otherwise dark grey; a small round hyaline spot below the lower end of cell between veins 2 and 3; sometimes the central area is clouded with grey; traces of large pale spots between veins before the margin.

Hindwing: similar, but paler; the cross markings more distinct, and rufous-tinged; a fine ferruginous line along hind margin; inner margin pale ochreous; fringe of inner margin and a row of hairs along vein 1 pale ochreous.

Underside speckled with brown; forewing with three brown patches, two postmedian, below costa and above inner margin, the third below apex.

Head, thorax, abdomen, and legs dark grey; abdomen beneath ochreous.

Expanse of wings: 28—30 mm.

3 ♂♂, 4 ♀♀ from Guizo Island, Solomons, November 1903 (Meek).

2. *Canaea venustula* spec. nov.

Forewing: grey, covered with rough transverse darker grey reticulations, and crossed by five or six irregular darker bands, which on inner margin become reddish; the antemedian, median, and postmedian are vertical; two towards apex are less distinct, shorter, and more or less broken up; the base and costa are grey-brown; the costal edge white, with numerous dark dots; from apex to middle a row of red marginal spots between veins; fringe dark grey, the tips below the middle white.

Hindwing: with the bands red, the marginal line continuous, red; fringe dark grey, white-tipped throughout, and varied in places with red scales.

Underside paler, with all the markings much clearer; apex of forewing tinged with red.

Head and thorax grey-brown like the wings; abdomen red, with anal tuft ochreous yellow; abdomen beneath and legs pale, thickly speckled with grey-brown.

Expanse of wings: 22 mm.

1 ♂ from Upper Aroa River, British New Guinea, January 1903 (Meek).

3. *Hypolamprus subumbrata* spec. nov.

Forewing: pale flesh-coloured ochreous, crossed by pale brown wavy lines, with faint strigae between them; the lines roughly in pairs and after the first pair becoming oblique inward parallel to hindmargin; the third pair above the middle

diverging funnel-shaped to the costa at one-half and three-fourths; the fourth pair, which is submarginal and wider below, is preceded and followed by paler bands containing a row of faint striae down their centre; the costa is diffusely whitish grey.

Hindwing: similar, but the basal lines clouded.

Underside duller, more grey; costal half of forewing to two-thirds shaded with dull brown.

Head, thorax, and abdomen like wings; face and palpi dark brown.

Expanse of wings: 36 mm.

1 ♀ from Maymyo, Shan States, June—August 1902 (Hauzwel).

Veins 8, 9 of forewing are stalked, and I have provisionally, therefore, placed the species in *Hypolamprus*, though it appears somewhat out of place.

4. *Striglina floccosa* spec. nov.

Forewing: dull brick-red, tinged along the costa with olive-fuscous, and with the transverse streaks and reticulations of the same colour; these form many indistinct curved lines parallel to hindmargin, those beyond middle bluntly angled on vein 4, that in the middle of wing slightly thicker and more conspicuous, containing an obscure dark cell-mark; fringe brick-red, with the tips somewhat darker.

Hindwing: very similar; along inner margin the fringe and a bed of hairs to vein 1 fluffy pink.

Underside with basal half of wings pink, outer half fulvous; on the discocellular of forewing a large spot of blackish and grey scales; the inner margin pink without striae; hindwing with base and inner half of wing covered with fluffy pink hairs.

Head and shoulders red-brown; thorax and abdomen redder; legs fulvous red, the tarsi brown: forelegs with tibiae and tarsi dark brown, the latter ringed with white, the former with a large flake of snow-white.

Expanse of wings: 35 mm.

1 ♂ from Upper Aroa River, British New Guinea, April 1903 (Meek).

This species is nearest *superior* Butler, which is, however, dull ochreous in colour, and has a distinct pencil of hairs on the hindwing on vein 1.

5. *Striglina scintillans* spec. nov.

Forewing: bright vermilion red, much brighter than in *S. reversa* Warr., which otherwise it greatly resembles; costa **narrowly** brown, in *reversa* the costal area as far as subcostal vein is dark; lines and reticulations much as in *reversa*, but much fainter; between the veins series of small round yellow spots alternate with the red; in *reversa* the whole wing is red: spots of the marginal line and the transverse reticulations of the submarginal and postmedian series studded with bright metallic scales.

Hindwing: the same; fringe of inner margin yellow, not reddish.

Underside red, not pinkish-ochreous, as in *reversa*.

Head, thorax, and abdomen vermilion; abdomen beneath and legs yellow-ochreous; forelegs in front, and middle legs externally, pectus, and palpi vermilion.

Expanse of wings: ♂ 24—26 mm.; ♀, 30 mm.

4 ♂♂, 1 ♀ from Upper Aroa River, British New Guinea, February—April 1903 (Meek).

Taken along with 5 ♂♂ and 7 ♀♀ of *S. reversa*, not one of which bears the slightest trace of metallic scaling. In both sexes this species is smaller than *reversa*.

FAMILY URANIIDAE.

SUBFAMILY EPIPLEMINAE.

6. *Decetia uniformis* spec. nov.

Forewing: drab, densely dusted with leaden-grey speckling; a dark discocellular spot; in some cases a very faint rust-coloured oblique line can be seen, placed as in *dichromata*, and the course of the submarginal spots is traced in the same colour; fringe dark rust-colour.

Hindwing: the same.

Underside equally uniform.

Head, thorax, and abdomen concolorous.

Expanse of wings: 48—52 mm.

2 ♂♂, 3 ♀♀ from Treasury Island, Solomons, August 1901 (Meek).

Decetia dichromata Wlk. in all its localities is subject to great general variation, and the sexes in particular differ from each other; in the present species the sexes are exactly alike, and there is not the slightest trace of variation in any of the five examples. I must therefore, for the present, consider them to form a separate species.

7. *Epiplema triangulifera* spec. nov.

Forewing: fawn-colour, finely speckled with grey; the lines dark brown, all three more or less vertical and parallel; the first obscure at one-third, not marked above subcostal vein; second at two-thirds, thick; third submarginal, not reaching costa; cell-spot brown, linear; fringe concolorous, mottled with dark beyond veins.

Hindwing: with outer line bluntly angled at middle, edged externally by a pale line; a brown line along median vein from base, forming with the brown discal line a distinct brown triangle in midwing; a dark brown cloud along hindmargin from upper tooth to below lower tooth, before which it is crossed by a pale line.

Underside of forewing dull brown, of hindwing ochreous speckled with brown; the outer line brown and distinct in both wings.

Face and palpi black; vertex, thorax, and abdomen concolorous with wings.

Expanse of wings: 19 mm.

2 ♂♂ from Guizo Island, Solomons, November 1903 (Meek). I have seen a ♂ also from Guadalcanar, Solomons.

Forewing with hindmargin merely indented between veins 6 and 3; hindwing with short teeth at veins 4 and 7.

8. *Monobolodes schistacea* spec. nov.

Forewing: deep slate-colour; the lines black, placed exactly as in *M. nigrescens* Warr. from Fergusson Island, but without any yellow scaling; the outer line

somewhat inbent in middle towards the angle of inner line, which is only distinct towards inner margin ; the black line at base of fringe swollen towards apex.

Hindwing : with the black line central and continuous ; the abdominal fold bluish white, the pencil of hairs, when expanded, cream-coloured.

Underside paler slate-colour, especially in the ♂, where the hindwing becomes bluish white towards anal angle.

Head, thorax, and abdomen all dark slate ; anal tuft in ♂ white.

Expanse of wings : 26 mm.

4 ♂♂, 4 ♀♀ from Guizo Island, Solomons, November 1903 (Meek) ; and 1 ♂ from Treasury Island, August 1901 (Meek).

FAMILY GEOMETRIDAE.

SUBFAMILY OENOCRROMINAE.

9. *Arhodia retractaria* ab. *carnea* nov.

Differs from the type form of *retractaria* Wlk. in being without markings of any kind on the upperside, except a slight dark cell-spot ; the hindwing is deep rosy, with the fringe of hind and inner margin white ; the forewing shows an admixture of luteous ; fringe of forewing dark ferruginous.

Underside paler, especially towards base ; forewing with an oblique curved purple blotch from vein 2 to 6, bounded by an indistinct brownish outer line from costa before apex ; discocellular and veins 3, 4, 5, all marked with purple ; space between them pale pink, paler than rest of wing ; hindwing with indistinct outer line in costal half of wing.

Head, thorax, and legs pale flesh-colour ; abdomen whitish, tinged on dorsum with flesh-colour.

Expanse of wings : 60 mm.

1 ♀, Toowoomba, Brisbane district, Queensland.

In forewing the hindmargin is slightly concave beneath the apex and bluntly elbowed at vein 5, thence oblique and straight ; hindwing with margin and both angles rounded.

10. *Sarcinodes subfulvida* ab. *olivata* nov.

I described *subfulvida* from Kiriwini, Trobriand Islands (*Nor. Zool.* iii. p. 280) (1896), from 3 ♂♂, and since then have met with examples from Ron Island, St. Aignan, and New Guinea. In nearly all these, both ♂♂ and ♀♀, the prevailing tint, as in the type, has been red ; but in 2 ♂♂ from the Upper Aroa River, British New Guinea, the colouring was much darker and the red tinge almost absent. I have lately seen a ♀ from the same locality, corresponding to these ♂♂, which, as suggesting at least a very distinct local race, I describe as ab. *olivata*.

Forewing : dark olive, suffused with fuscous, and overlaid from base to outer line by dark slaty grey and white scales, these latter prevailing along inner margin and at costa before the outer line ; the inner and median lines are distinct but diffuse ; the outer line is double, both arms being dark olive, marked with clear white spots on the veins and towards inner margin filled in with white ; the waved submarginal line has the lunules marked with whitish and black scales ; and the fringe is dark olive.

Hindwing : with the double line filled in with white throughout, closely

preceded by a large round white cell-spot ; the rest as in forewing, but the dark fringe is preceded by white scales, and the inner margin and fringe are whitish.

The underside is pinkish brown with all the markings indicated by darker shades ; the costa of forewing is marked with white scales and a white blotch before apex ; all the lines are marked by fine pale dashes on veins, and the white cell-spot of hindwings is plain, with another white spot below it.

Shoulders, vertex, and upper half of face brownish olive ; lower part of face and palpi dark grey ; thorax and abdomen grey and olive mixed ; base of palpi beneath and pectus fulvous-tinged ; legs blackish spotted with white.

Expanse of wings : 60 mm.

Upper Aroa River, British New Guinea (A. S. Meek).

A large pale discal spot occurs also in *S. cultuaria* Guen. from Borneo, but on the underside of hindwing only ; and a similar spot on the upper side of forewing is mentioned in the description of *S. perakaria* Swinhoe ; both these examples being, like the present one, ♀♀.

SUBFAMILY GEOMETRINAE.

11. *Thalassodes subviridis* spec. nov.

Forewing : bright pale green, with a few faint pale transverse striae, most distinct in the marginal area ; costa cream-colour ; a fine oblique whitish inner line only visible below median vein ; a nearly vertical straight outer line from below costa just beyond middle ; fringe yellow.

Hindwing : with outer line only, distinct from costa to vein 3, where it is angled and becomes fainter.

Underside mealy pale green ; the costa of forewing ochreous.

Head, thorax, and abdomen all green ; vertex snow-white ; basal half of antennal shaft white, apical half green, the pectinations grey-green ; abdomen with a pale dorsal line.

Expanse of wings : 27 mm.

1 ♂ from Christmas Island (Andrews).

Nearest to *Th. dorsilinea* Warr. from New Guinea, but smaller and much greener on the underside ; the antennae are heavily pectinated, and quite three-fourths of the length of forewing ; hindmargin of hindwing bluntly bent at middle.

SUBFAMILY STERRHINAE.

12. *Mesotrophe ? subrubrata* spec. nov.

Forewing : fawn-colour, densely sprinkled with dull red, partially confluent, dots and striae ; costa brown-black at base, paling towards apex ; lines of the same colour, but obscure ; first from one-fifth of costa to one-fourth of inner margin, waved and interrupted ; outer from nearly three-fourths of costa to three-fourths of inner margin, lunulate-dentate, outcurved in middle ; a vertical thick waved olive-brown median shade ; cell-spot minute, white with a dark ring ; submarginal line obscure, but preceded and followed by black lunular clouds below costa and above inner margin ; marginal lunules blackish ; fringe concolorous.

Hindwing : with inner line marked by a black blotch at one-fourth of inner margin ; cell-spot minute, white ; the rest as in forewing, but the black clouds in

submarginal field confined to anal region only, forming there a large subquadrate patch.

Underside uniform dull rosy.

Palpi ochreous below, bright pink above; face deep red; fillet and antennae ochreous; vertex and base of shoulders black-brown; thorax and base of abdomen like wings; anal segments of abdomen and the underside paler, more ochreous.

Expanse of wings: 40 mm.

1 ♀ from Guizo Island, Solomons, November 1903 (Meek).

Probably a *Mesotrophe*.

SUBFAMILY HYDRIOMENINAE.

13. *Gonanticlea deleta* spec. nov.

Exactly like *Gonanticlea sublustris* Warr., except that the central fascia is merely denoted by the pale limiting lines marked by black specks on the veins, the broad black bands of *sublustris* being restricted to the costal area as far as vein 6; the whole wing is thus reddish grey-brown, with a slight leaden purple tint beyond outer line. If this had been the only difference, however, I should have considered it merely an aberrational form; but the forewings of the ♂ on the underside are without the pilose scaling by which *sublustris* is characterised.

Expanse of wings: ♂ 39 mm.; ♀ 35 mm.

1 ♂, 1 ♀ from Upper Aroa River, British New Guinea, March 1903 (Meek) taken along with a typical ♂ example of *sublustris*.

From the black costal markings the insect superficially assumes the likeness of a large *Lyggranoo*.

SUBFAMILY TEPHROCLYSTIINAE.

14. *Neoscelis cristata*.

Gymnoscelis cristata Warr., *Nor. Zool.* iii. p. 229 ♀ (1896).

Neoscelis rivula Hmps., *Journ. Bombay N. H. Soc.* xiv. p. 639, no. 3748b. ♀ fig. (1902).

The description of *N. rivula* Hmps. and the figure apply perfectly to *G. cristata* Warr. sunk on p. 640 by Hampson to *G. deleta*. The insect also occurs at Penang, in the Andamans (coll. Swinh.), and in New Guinea; but all the examples are ♀♀. On examination of the New Guinea examples I find that 7, 11, 10, 8, 9 of forewings are stalked together as in *Neoscelis* Hmps. and *Adeta* Warr., which latter will probably have to fall to *Neoscelis*. But at present there are considerable differences between the genera. In *Adeta semifascia* Warr. and in the New Guinea examples of *cristata* the hindtibiae have a single long middle spur, and the antennae of the ♀ are simple, not ciliated; vein 5 rises from the centre of the discocellular, and 6 from the depressed upper end of the cell; further, in *semifascia*, the type of *Adeta*, vein 11 does not anastomose with 12, as is the case in *cristata*.

SUBFAMILY TRICHOPTERYGINAE.

15. *Anthierax subfulva* spec. nov.

Agrees in most points with the description of *A. malacca* Meyr. (*Remodes*) from New Guinea, but the palpi are externally coal-black, not green; the outer lobe of the hindwing of ♂ is blunt, and below, the tuft in the fringe between the outer lobe

and the next is dull fulvous. In the forewing the darker green transverse lines are all tinged with blackish along the submedian interval, the cell and space beyond it between veins 4 and 6, and also between veins 6 and 7; the cell-spot is black, not green as in *malacca*. The abdomen is greenish cinereous. It agrees with *malacca* in having white spots behind the eyes and a black lateral mark on the shoulders.

Expanse of wings : 36—40 mm.

2 ♂♂ from Guizo Island, Solomons, November 1903 (Meek).

16. *Anthierax subnigrata* spec. nov.

Forewing : green, with darker green waved transverse lines, which beyond middle are regularly dentate-lunulate, much more regular than in *A. subfulva*; of the four basal lines the second is slightly purplish-tinged; the four lines forming the central fascia, one before the green cell-spot and three beyond, are all purplish-tinged, and so is the submarginal line and the teeth of the line preceding it, as well as the marginal spots; the marginal space is slate-colour, quite bluish in the middle, and the fringes slate-colour, with white spots beyond the veins.

Hindwing : purplish grey with long grey hairs from the base of wing; the fringe of inner margin long and glossy black, of outer margin ochreous and shorter.

Underside of forewing greenish cinereous; of hindwing purplish black.

Head, palpi, and thorax green; abdomen cinereous olive; white spots behind the eyes, but no black marks on shoulders.

Underside of abdomen on basal half and inside of the tuft of hair on hindtibiae blackish.

Expanse of wings : 30 mm.

1 ♂ from Guizo Island, Solomons, November 1903 (Meek).

Quite distinct from the preceding species *subfulva*.

17. *Sauris angusta* spec. nov.

Forewing : whitish green, with dark green cross-lines; the centre of the wing is crossed by a wide sinuous band of pale green containing the green cell-spot; between this and the base are six waved outwardly oblique green lines, of which the second is tinged with purplish; beyond it are four lunulate-dentate green lines, of which the innermost (not, as usual, the outermost) is purplish-tinged; the submarginal line is slightly purplish, as are the marginal spots; fringe worn.

Hindwing : pale grey, greenish-tinged, a little darker towards margins.

Underside of forewing greenish grey, of hindwing brownish fulvous, the scales thick and coarse.

Head, palpi, thorax, and abdomen green, the last paler and greyer. Antennae glossy, purplish, fulvous beneath; the upper surface sinuate, as in *Helminthoceras*.

Expanse of wings : 26 mm.

1 ♂ from Guizo Island, Solomons, November 1903 (Meek).

The hindwing is very narrow, the costa and inner margin only slightly diverging; the hindmargin is slightly prominent at one-third from apex and one-third from anal angle; there are only four veins; the costal and subcostal separate at one-third from base, the costal running to apex and the subcostal to the upper prominence; vein 5 is absent; the median runs into the lower projection and vein 3, which rises

near base, into the anal angle ; no discocellular is visible ; the lobe at base of inner margin is suberect, and about one-fourth of the length of the margin. In the shape and thick scaling of the hindwing the insect approaches *Dystypoptila triangularis* Warr. from Sumatra.

SUBFAMILY DEILINIINAE.

18. *Peratophyga bifasciata* spec. nov.

Forewing : pale yellow ; the markings dark brown ; a curved fascia just before middle and a broad marginal border, connected by a brown streak from base along vein 1, below which on the inner margin the yellow of the ground-colour reappears as broken patches ; costa at base also brown ; the inner edge of the dark border projects shortly inwards on median vein, and the yellow space before it is traversed by a row of brown vein-dots ; submarginal line indicated by slight yellow marks on the veins along the centre of the dark border, with a yellow spot at apex ; marginal yellow spots at end of veins ; fringe brownish.

Hindwing : like forewing.

Underside the same, but the yellow paler and clearer, without any spots.

Head, thorax, and abdomen brown ; second segment and anal tuft yellow ; abdomen beneath and legs yellowish.

Expanse of wings : 18 mm.

1 ♂ from Cheng Mai, Hainan, August 1902.

SUBFAMILY ABRAXINAE.

19. *Abraxas parvipunctata* spec. nov.

Forewing : cream-white ; the base of wing on costa yellow ; costal area with numerous small round grey spots, irregularly disposed and in places confluent ; a few scattered ones in cell, and a larger one on discocellular ; at two-thirds of costa a small oblique grey blotch followed by a small spot on vein 6 ; two submarginal series of spots parallel to hindmargin, the inner small and placed on the veins, the outer larger between them, coalescing laterally above middle with a marginal row, below it interrupted.

Hindwing : with the three outer series of spots only, all separate.

Underside similar, but all the spots larger and better defined.

Head, thorax, and abdomen yellow, the last with dark spots ; palpi and legs externally dark fuscous.

Expanse of wings : 50 mm.

1 ♀ from Dili, N.E. Sumatra.

In appearance nearest to *A. virginalis* Butler.

SUBFAMILY SEMIOTHISINAE.

Loxotephria gen. nov.

Forewing : costa faintly curved ; hindmargin obliquely curved.

Hindwing : with hindmargin only slightly curved ; apex rounded ; anal angle blunt.

Antennae simple in both sexes, with very short pubescence in ♂ ; forehead

with projecting peak of scales; palpi porrect, well-scaled, the segments indistinct; tongue and frenulum present; hindtibiae with four spurs; submedian vein of forewing of ♂ swollen at base into a small fovea.

Neuration: forewing, cell nearly half the length of wing; discocellular vertical, but strongly oblique below; first median nervule at four-fifths, second just before third; radials normal, 5 slightly above centre; 7, 8, 9 stalked; 10 anastomosing at a point with 11, which rises from 12: hindwing, 7 and 3 well before angles of cell.

Type: *Loxotephria olivacea* spec. nov.

Tephria ? *convergens* Warr., from West China, described from a ♀ only (*Nor. Zool.* vi. p. 61, 1899), should be placed in this genus.

20. *Loxotephria olivacea* spec. nov.

In markings resembling *convergens* Warr., but the ground-colour of the wings is olive-yellowish, sometimes quite green along cell and below costa of forewing; costa with short purplish striae; first line red or red-brown, the angle in cell touching the red cell-mark; outer line red-brown, externally edged with lustrous pearly scales; submarginal line olive-green; the marginal space beyond it darker, and covered with lustrous violet; fringe brown, with red-brown basal and middle lines.

Hindwing: without the basal line; the other two straight and parallel.

Underside deep bright yellow; striae and lines purple-red; the marginal cloud purplish-violet, and stronger in the ♂ than in the ♀.

Head, thorax, and abdomen like wings; face brown.

Expanse of wings: ♂, 28 mm.; ♀, 30 mm.

Several examples from Manchyo and Secha, Hainan, May and June 1902.

L. convergens from West China is darker, browner, and has a brown subcostal streak through the angles of the lines of forewing.

SUBFAMILY ASCOTINAE.

21. *Amblychia schistacea* spec. nov.

Forewing: dark slate-colour; the lines and interval between outer and submarginal lines deeper; inner line curved, projecting strongly above median, and less prominently below, edged inwardly by paler slate-colour and whitish. There are also some whitish flakes on costa and in cell between the inner and median lines; interval between median and outer lines from costa to vein 3 occupied by a cream-white blotch speckled with slate-colour, followed below 3 by a large white blotch filling up the lunule of median line; the lunule below it white-edged; cell-spot black, nearly touching the inner edge of the white blotch; fringe brown-slate.

Hindwing: similar, with only a few whitish flakes beyond antemedian line, those in cell most conspicuous, and a white lunule between veins 7 and 8.

Underside with basal area of both wings pale greyish slate, varied with dull ochreous and speckled with darker; outer area of both wings slaty fuscous, the white markings well expressed in forewings, obscurely in hindwing.

Head and shoulders dark slaty fuscous; patagia, thorax, and abdomen pale dirty ochreous.

Expanse of wings: 104 mm.

1 ♂ from Batchian (Waterstradt).

22. *Catoria lucidata* spec. nov.

Forewing : white, with olive-green speckling only ; the lines, double, dark olive-green, placed much as in *delectaria* Wlk., but the outer line conspicuously angled on vein 6, not rounded ; lunules of the shade preceding submarginal line marked with blackish beyond cell and between veins 7 and 8, and 2 and 3 ; marginal lunules and cell-spot black ; fringe white.

Hindwing : like forewing ; cell-spot a black point, not an ocellus.

Underside greenish brown clouded with velvety black before the white spaces of the hindmargin, which are bright white, not cloudy as in *delectaria* ; cell-spot of forewing velvety black, large and round ; of hindwing only a black point.

Head and thorax pale greenish ; abdomen white, the basal segments edged with brownish scales : antennal pectinations rufous ; in *delectaria* they are fuscous.

Expanse of wings : 48 mm.

1 ♂ from Guizo Island, Solomons, November 1903 (Meek).

REMARKS UPON SOME THEORIES IN REGARD TO THE
MIGRATION OF BIRDS.

BY W. RUSKIN BUTTERFIELD.

I SUPPOSE most persons who are acquainted with the literature of bird-migration must feel that few of the theories with which the subject is burdened compel assent. In the present paper I venture to put together under the various headings such suggestions as appear to me to be of moment.

INCENTIVES TO MIGRATION.

The awakening of the impulse of migration in spring and autumn is often confused with the proximate cause or causes of the separate journeys by which the whole migration in each direction is accomplished. The inherent stimulus is doubtless felt in many, and perhaps in most, birds before the northward or southward movement is embarked upon. The immediate incentive to migration need not be the same for all species of migrants, nor indeed for all the individuals of the same species ; moreover, the incentive to spring migration need not be the same as the incentive to autumn migration. From the confusion mentioned above, some writers have sought uniform causes competent to account for each of the two great movements in all species. The incentives to these movements may result, as I shall hope to show, from a variety of causes acting alone or in concert, and in seeking them we need not concern ourselves with the *original* cause of migration.

Taking the autumn migration first,* scarcity of food is thought by many authors to afford a sufficient explanation of the desertion of the summer quarters by most species, although it is allowed that this cannot be the sole cause, since it not infrequently happens—as in the case of our Song Thrush—that a breeding

* For convenience, the series of journeys constituting each of the two great seasonal movements requires to be denoted by a separate term.

area which is wholly or partly deserted by the native birds is inhabited later on by an invasion of individuals of the same species from a more northerly area.

"The mode in which the want of sustenance produces migration," writes Professor Newton, "may best be illustrated by confining ourselves to some of the unquestionably migrant birds of our own northern hemisphere. As food grows scarce toward the end of summer in the most northern limits of the range of a species, the individuals affected thereby seek it elsewhere; in this way they press upon the haunt of other individuals: these in like manner upon that of yet others, and thus

‘The waves behind impel the waves before.’

until the movement which began in the far north is communicated to the individuals occupying the extreme southern range of the species at that season; though, but for such an intrusion, these last might be content to stay some time longer in the enjoyment of their existing quarters" (*Dictionary of Birds*, p. 555).

While admitting that want of sustenance may prompt the autumn migration in some cases, it may be doubted whether it is so important a factor as is commonly supposed. It is obviously of advantage to birds to perform the journey while yet the food supply is fairly ample, and before their physical powers become impaired with fasting. If we suppose that, in a species of migrant, a certain number of individuals delay the movement until hunger compels their departure, clearly a larger proportion of such individuals will succumb to the hardships of the journey than of other individuals that left the breeding-quarters a short time previously.

There appears to be some evidence that completion of the moult, or, at any rate, passage through the critical stage of moulting,* and also (in adults) decline of the stimulus of reproduction, are factors: the precise period of departure being, perhaps, largely determined by a marked fall in temperature.

The early departure of adult Cuckoos (*Cuculus canorus*) is often cited as a special difficulty. In this species the cares of family life are foisted upon others; when, therefore, functional activity of the reproductive apparatus diminishes, this circumstance alone may be sufficient to incite the birds to retreat.

Turning now to the reverse journey, the very striking instances on record of the selfsame spot being selected for nesting purposes year after year by the same species have been claimed as an indication that birds make the return journey from a desire to reoccupy old quarters. These facts may, however, be interpreted in a different manner—namely, as a proof of the eligibility of the particular locality as a breeding area, and of the particular spot as a nesting site. When a particular spot has afforded to a pair of birds a secure and convenient situation for the home, it is likely enough that one or both of them will prefer to return to it again the following year from its known suitability; and we need not attribute to birds a greater partiality for their old haunts than this. Several circumstances may render it impossible for more than one (and sometimes for either) of the original pair to reoccupy the same place, such as, for instance, the alliance of one of them with a different mate, or death. Of the individuals that return in spring most will do so for the first time, and their knowledge of the exact locality of their birth can hardly be supposed to be very precise, since they left it at an early age.

* Cf. Dr. Jonathan Dwight, jun., "The Sequence of Plumages and Moults of the Passerine Birds of New York" (*Annals N. Y. Acad. Sci.* xii, p. 126).

Dr. J. A. Allen supposes that "the spring movement is incited by the periodic activity of the reproductive organs, resulting in the necessity for the return of the species to the peculiar conditions and surroundings to which for long ages it has been undergoing special adaptation—in other words, to its home."* On the other hand, Professor W. W. Cooke and Mr. W. Eagle Clarke have demonstrated the importance of temperature as a factor, the latter even asserting, in regard to the spring emigratory movements from the Continent of Europe to the British Islands, that "it has invariably been found that all such movements, except those performed late in the season, are to be correlated with a rise of temperature in south-western Europe, and perhaps in northern Africa. That this induces the birds to embark on their northward journey does not admit of doubt."† No doubt those pronounced movements, sometimes called "rushes," are caused by a decided rise in temperature over the areas whence the movements began, but during the interval between successive "rushes" migration must be supposed to be in progress, even if unobserved. Further, the remarkable uniformity of climatic conditions prevailing in the Tropics makes it clear that we must look elsewhere for an explanation of the departure of migratory species which winter in this zone.

MIGRATION ROUTES.

While some ornithologists think that birds migrate with an extended front, roughly corresponding in width to that of the breeding area, others maintain that they follow geographically defined routes, whose deflexions depend primarily upon topographical features.‡

Our knowledge of the precise boundaries of the winter range of many even of the best known summer visitants to Europe is very imperfect. Having reached the winter quarters, there is not the same necessity for birds to occupy a limited area as there is during the breeding season, and doubtless more or less individual wandering takes place, as indeed we see to a pronounced degree in the winter immigrants to our own area. The spring journey, therefore, for the same bird may start during successive years from points widely separated. The conclusion which best harmonizes with actual observations is that, in the performance of the journey to and from the breeding quarters, each species traverses a definite route, some sections of which may deviate widely from its general trend. The route may intersect other routes, or may coincide with them for a longer or shorter distance. Where physical features are followed, we may be sure it is not from the guidance they afford, but because they mark out convenient highways. There is some indubitable evidence that migration at times proceeds at great heights. Whether on these occasions the routes followed are more direct and wholly independent of the relief of the land is not yet known.

* "The Geographical Origin and Distribution of North American Birds, considered in Relation to the Faunal Areas of North America" (*Auk*, x. p. 104).

† "Digest of the Observations on the Migrations of Birds at Lighthouses and Light-vessels, 1880-1887" (*Report Brit. Assoc.*, 1896, p. 474). See also Cooke, "Report on Bird Migration in the Mississippi Valley in the years 1884 and 1885" (*Bulletin No. 2, Division of Economic Ornithology* [now *Biological Survey*], U.S. Department of Agriculture, p. 16 et seq.).

‡ "Sie verfolgen vielmehr ganz bestimmte, geographisch begrenzte Strassen, deren Biegungen vor allem durch die topographischen Verhältnisse der Gegenden bedingt werden" (J. A. Palmén, *Referat über den Stand der Kenntniss des Vogelzuges*, p. 3). Professor Palmén, it should be mentioned, is speaking of certain Arctic-breeding birds, but he appears to think the statement may be taken generally.

There is another phase of the subject that deserves notice. In witnessing migration in progress, especially over the sea, one can hardly fail to remark that certain "fly-lines" are followed. This phenomenon has sometimes led observers to conclude that birds cross the sea from certain points only. This is probably an erroneous view, and we may expect to find that the departure takes place from any point within the section of the coast corresponding to the migration route. When an individual or a party takes the initiative, the force of example causes the lead to be followed by other individuals or parties, and in this fashion a "fly-line" is established.

HOW DO BIRDS FIND THEIR WAY?

When we turn to the question as to how birds direct and maintain their flight in the right direction, we are confronted with a problem of the most perplexing kind, and one which is much complicated by reason of the great diversity to be observed in the movements of most species, and in the conditions under which the movements take place. Want of sustenance and temperature changes are doubtless sufficient to lead birds to wander, but these causes operating alone are just as likely to lead them to wander in the wrong direction. They need to be associated with some other and more important factor before orderly progression in a definite direction becomes possible.

Many writers have supposed that guidance is afforded by the prominent topographical features of a country, such as rivers and mountain systems. Let us take the case of a common and widely distributed migratory species in our own country, say, the Swallow, and consider how the individuals may, by the aid of physical features, reach the south coast. During their flights in search of food, individual Swallows, no matter what part of the country they occupy, are pretty certain to explore a sufficiently wide radius to make themselves acquainted with numerous waterways. If a waterway is followed in the direction of the stream, sooner or later the sea-board is reached. This, then, would be an easy way of reaching the coast; but there remains the difficulty of reaching the south coast, and this difficulty is not at all lessened in the case of those birds which reach the east and west coasts, since a faculty that would enable them to follow these coasts in a southerly direction would suffice to enable them to attain the desired end by directing their flight from the first in a southerly direction. In the case of great masses of land, the guidance afforded by following rivers or mountain ranges would, as often as not, lead birds right out of their course.

Any one who examines the evidence that has been adduced in support of the theory that birds are guided by the prominent physical aspects of the land they traverse will, I think, not fail to become convinced of the inadequacy of such guidance.

Some authorities of note have thought that the guidance may be due to a "sense of direction," and in support of the theory have referred to the exercise of such a faculty by human beings, especially savages, and by wild and domesticated animals. It is to be observed, however, that this faculty is, to a very large extent, correlated with experience; and it seems doubtful, to say the least, whether it can ever be "wholly independent of intellectual forces," as is averred by Professor Newton (*op. cit.* p. 569, footnote); for, if this were true, young savages and young "homing" Pigeons would find their way as easily as adults.

In the case of a migrant, the faculty of orientation is not only advantageous to the individuals (as in the other cases mentioned), but absolutely indispensable to the existence of the species, and leaves little room for adventitious elements.

I do not doubt that birds possess a sense of direction—indeed, this is evinced in the well-known wanderings of Albatrosses in the Southern Ocean. While these birds are extremely local during the breeding season, at other times they wander great distances in any direction, although seldom beyond definite north and south limits. The faculty whereby they direct their flight back to the breeding stations, over hundreds of miles of open water, is doubtless akin to that exhibited by savages and Pigeons.

ORIGIN OF BIRD-MIGRATION.

Several attempts have been made to trace the origin of the impulse of migration in the northern hemisphere to those secular changes of climate which resulted in the Glacial Period. The theory is admirably stated by Dr. Allen (*op. cit.* pp. 100-102), and I may here attempt a summary.

During the southward progress of the "ice-cap," the area occupied by many species of birds would be gradually encroached upon, but the effect produced would vary greatly in different cases. A species having a restricted northern habitat might become extinct; another species with an extensive latitudinal range, especially if the northern limits of the range did not previously extend much beyond the southern boundary of the ice, might be unaffected save for a lessening of area. "Opportunity was given for the gradual adaptation of many forms to a lower temperature than that to which they had been accustomed, and to an enforced change of food," thus leading to the evolution of new types. Dr. Allen thinks there was "a great crowding together of exiles from the north into the more favoured regions to the southward." This may be doubted. The process was so gradual that it is more likely there resulted extinction or modification of the northern forms, and at the culmination of the period of glaciation we may suppose that a state approaching equilibrium was reached. "Finally the ice receded to its present limits, and the whole north, under radically altered climatic conditions, became again available for occupation by the more or less modified descendants of the pre-glacial exiles." It was at the time of the recession of the ice that the impulse of migration is supposed to have originated and become established. During the milder period of the year some species would seek to extend the bounds of their range—only, however, to be driven back upon the approach of winter. This incipient migration would become more orderly and also more extended as habitable land became available.

All that this hypothesis claims is that we must look to the changes of climate induced in the northern hemisphere by the decline of the Glacial Period as the ultimate cause of migration in this part of the globe. Indications are not wanting, however, that, under conditions obtaining at the present time, the migratory impulse tends to strengthen in some forms and to weaken in others.

An excellent illustration of this tendency is afforded by the American forms of *Otocoris alpestris*. In Mr. Harry C. Oberholser's careful and elaborate treatise ("A Review of the Larks of the Genus *Otocoris*," *Proc. U.S. Nat. Mus.* xxiv. pp. 801-883, pls. xliii-xlix) twenty-two New World forms are recognized. Of these eleven are migratory, ten apparently resident, and one from lack of material doubtful—namely, *Otocoris alpestris pallida*. The migratory forms mostly fall into

two series, one consisting of the northern forms *O. a. alpestris*, *hoyti* and *arctica*, of which the breeding areas are north of parallel 47° N.; and the other of the central forms *O. a. strigata*, *merrilli*, *leucolaema*, *enthymia* and *praticola*, almost confined to the belt between 37° and 54° N. The three other migratory forms—namely, *O. a. adusta*, *ammophila* and *occidentalis*—occupy restricted breeding areas in the south-west of the United States. Of the ten apparently resident forms, *O. a. giraudi*, *peregrina*, *chrysolaema*, *oaxacae*, *aphrasta* and *diaphora*, have ranges to the south of any of the migratory forms, extending from about 32° N. to close to the Equator. The four remaining forms, *O. a. insularis*, *actia*, *rubea* and *leucansiptila*, occur in the west and south-west of the United States. (Cf. Map, Pl. XLVII.)

We arrive, therefore, at the following results:—

1. All the Horned Larks which breed north of 41° N. lat. are migratory.
2. All the forms south of 30° N. are resident.
3. Between these parallels are found forms apparently strictly resident, such as *O. alpestris rubea*, which is confined to the Sacramento Valley, California; and forms distinctly migratory, such as *O. alpestris adusta*.

Here we have an assemblage of closely allied forms, some of which are eminently migratory, while others are sedentary, and between the extremes are other forms which exhibit no “regular nor well-defined movement,” although “there exists a greater or less individual inclination to wander during the winter” (p. 802). There is some likelihood that the northern forms developed the impulse of migration in consequence of a gradual extension of range.

Most instructive instances of the development of migratory habits in consequence of extension of range are found in the almost exclusively tropical family *Trochilidae*, one species, *Selasphorus rufus*, extending north-west in summer to 61° N., while on the other hand *Eustephanus galeritus* “visits the inhospitable shores of Tierra-del-Fuego, where it has been seen visiting the flowers of fuchsias in a snowstorm, while it spends the winter in the warmer parts of Chili and Bolivia” (A. R. Wallace, *Tropical Nature*, ed. 1891, p. 323).

LEPIDOPTERA FROM THE SUDAN.

BY WILLIAM WARREN, M.A., F.E.S., AND THE HON. N. CHARLES
ROTHSCHILD, M.A., F.L.S.

(Plate IV.)

THE specimens mentioned in the present article were collected in the Sudan by the junior author, the Hon. Francis R. Henley, and Mr. A. F. N. Wollaston in 1904.*

1. **Papilio demodocus** Esp., *Aust. Schm.* p. 205. n. 93. t. 51. fig. 1 (1798) ("China," "Bengalen," *loci error*).

2 ♀ ♀, Khartoum, February 18th, 1904.

This species was abundant at Khartoum in the Zoological Gardens, flying round lemon trees (*Citrus*).

2. †**Danaida chrysippus f. chrysippus** (Linn.), *Syst. Nat.* ed. x. p. 471 (1758) (Egypt).

3 ♂ ♂, 1 ♀, Nakheila, R. Atbara, February 1904.

3. †**Danaida chrysippus f. dorippus** (Klug), *Symb. Phys.* text t. 48. f. 1-5 (1845) (Dongola).

2 ♂ ♂, 1 ♀, Nakheila, R. Atbara, January 31st, February 1st and 6th, 1904.

4. **Pyrameis cardui** (Linn.), *Syst. Nat.* ed. x. p. 475. n. 107 (1758) (Europe).

1 ♂, Nakheila, R. Atbara, February 13th, 1904.

5. **Belenois mesentina** (Cram.), *Pap. Exot.* iii. p. 140. t. 270. f. A. B. (1782) (Coromandel).

4 ♂ ♂, 4 ♀ ♀, Nakheila, R. Atbara, January 30th—February 6th, 1904.

6. †**Teracolus दौरا** (Klug), *Symb. Phys.* text t. 8. f. 1-4 (1829) (Arabia Felix); Sharpe, *Monograph Teracolus* p. 125 (1901).

9 ♂ ♂, 9 ♀ ♀, Nakheila, R. Atbara, January 30th—February 12th, 1904.

No specimens of the "dry season form" † *liagore* (Klug) were observed. One ♀ example secured shows traces of the orange patch on the forewing.

7. **Teracolus protomedia** (Klug), *Symb. Phys.* text t. 8. f. 13. 14 (1829) (Arabia Felix).

7 ♂ ♂, 1 ♀, Nakheila, R. Atbara, January 31st—February 12th, 1904.

* Species marked thus, †, were treated of in our previous paper on "Egyptian and Soudanese Lepidoptera," *Nov. Zool.* vol. viii. pp. 426-434 (1901).

8. **Teracolus evarne** (Klug), *Symb. Phys.* text t. 6. f. 1-4 (1829) (Ambukol);
Sharpe, *Monograph Teracolus* p. 90 (1900).

22 ♂♂, 6 ♀♀, Nakheila, R. Atbara, January 31st—February 14th, 1904.

9. **Teracolus pseudacaste** Bntl., *P. Z. S.* p. 156. t. 6. f. 11 (1876) (White Nile).

7 ♂♂, 2 ♀♀, Nakheila, R. Atbara, January 31st—February 12th, 1904.

10. †**Cupido baeticus** (Linn.), *Syst. Nat.* ed. xii. p. 789. n. 226 (1767) (Barbary).

7 ♂♂, 8 ♀♀, Nakheila, R. Atbara, January 30th—February 9th, 1904.

11. †**Cupido ubaldus** (Cram.), *Pap. Ex.* iv. p. 269. t. 390. f. L. M. (1782)
(Coromandel).

2 ♂♂, 2 ♀♀, Nakheila, R. Atbara, February 3rd—11th, 1904.

12. †**Cupido theophrastus** (Fabr.), *Ent. Syst.* iii. i. p. 281. n. 32 (1793)
(Morocco). (Pl. IV. fig. 17 ♂, 18 ♀).

22 ♂♂, 8 ♀♀, Nakheila, R. Atbara, January 31st—February 11th, 1904.

This species was generally to be found in company with the next, frequenting the long coarse grass near the river.

13. †**Catachrysops eleusis** (Demaison), *Bull. Soc. Ent. Fr.* (6). viii. p. 66
(1888) (Egypt). (Pl. IV. fig. 15 ♂, 16 ♀).

27 ♂♂, 15 ♀♀, Nakheila, R. Atbara, January 31st—February 13th, 1904.

- 13A. **Zizera karsandra** (Moore), *P. Z. S.* p. 505. t. 31. f. 7 (1865) (Bengal).

1 ♂, Nakheila, R. Atbara, February 4th, 1904.

14. **Celerio lineata livornica** (Esper), *Eur. Schmett.* ii. p. 88 (1779) (Italy).

1 ♂, Wady Halfa, February 23rd, 1904.

15. **Odontocheilopteryx griseata** spec. nov.

♂. *Forewing*: grey, darker in the central area; basal line blackish, waved, edged on both sides with whitish; outer line at two-thirds, oblique outwards from costa to vein 6, then oblique inwards, crenulate, edged with whitish, which is most marked at costa and before inner margin and there itself followed by a dark line; submarginal line dentate, blackish, space between outer and submarginal line often brown-tinged, this colour sometimes extending to base; fringe mottled with dark grey, and pale along base; a blackish blotch at end of submarginal line on inner margin.

Hindwing: pale greyish ochreous; fringe grey, above anal angle blackish.

Underside: basal half of forewing dark grey, containing a slight pale spot at end of cell, which is faintly visible on upper side, and followed by a pale costal spot; outer half of wing pale grey; hindwing pale grey, with curved dark grey central line and dark spot at anal angle.

Head, thorax, and abdomen grey; antennae pale greyish ochreous.

♀ pale smoky grey, darker towards base and inner margin, with three wavy parallel dark grey lines beyond middle; underside of both wings pale grey.

Expanse of wings: ♂, 24 mm.; ♀, 35 mm.

Near to *O. sobria* (Wlk.) from Natal, and *obsoleta* (Klug) from Nubia and Upper Egypt.

8 ♂♂, 2 ♀♀, Nakheila, R. Atbara, February 4th—9th; 1 ♂, Merawi, N. Sudan, March 12th; 1 ♂, Shereik, N. Sudan, January 19th, 1904.

16. **Beralade pura** spec. nov. (Pl. IV. fig. 13 ♂).

Forewing: white; the costal edge finely ochraceous; fringe white, faintly glossy; a faint trace of a pale brown oblique line from the direction of apex to before middle of inner margin.

Hindwing: white.

Underside white; the veins and marginal line slightly ochraceous.

Head, thorax, and abdomen white; palpi dull yellow, externally fuscous; legs white, the fore-knees fuscous; all the tarsi yellow with black rings; antennae ochraceous.

Expanse of wings: 40 mm.

1 ♂, Shereik, N. Sudan, January 19th, 1904.

The single specimen came to light. An acetylene lamp with a "sheet," similar to that used in the Fens of Cambridgeshire, was employed.

17. **Cossus henleyi** spec. nov. (Pl. IV. fig. 14 ♂).

Forewing: dark grey, with a rufous tinge at middle of wing in the submedian interval; costal area with numerous short black streaks, some of which are produced across wing as dark lines; one before middle, a second just beyond it, the two approximated below the median; one at two-thirds to near anal angle, and a fourth before hindmargin, ending above anal angle and ramifying towards margin; fringe iron-grey.

Hindwing: much paler grey, towards apex whitish, with dark grey rippling between the veins; fringe grey.

Underside pale dull cinereous; costal streaks of forewing short and thick; lines only visible towards hindmargin; hindwing like forewing in tint, the costa thickly dusted with blackish.

Head, thorax, and abdomen grey; tips of shoulders and patagia, and basal segments of dorsum black; antennae black; legs dark and light grey.

Expanse of wings: 40 mm.

9 ♂♂, Nakheila, R. Atbara, February 7th, 8th, 1904.

All the specimens came to light, settling at once on the sheet. This species is named in honour of the Hon. Francis R. Henley.

18. **Ilema henleyi** spec. nov. (Pl. IV. fig. 31 ♀).

Forewing: cinereous, speckled with blackish; at about one-third is a broad curved fascia constricted in middle, where the pale basal area projects into it; the costal, inner, and hindmargins are also sprinkled with black scales, and possibly in quite fresh examples the whole area is thus sprinkled; at two-thirds there are traces of an oblique line marked by black dashes on veins; before the marginal

area there appears to be an oblique space of pale ground-colour ; marginal blackish spots at ends of veins ; fringe grey.

Hindwing : white, the fringe included.

Underside white, the forewing slightly grey-tinged.

Head and thorax pale grey ; abdomen more luteous.

Expanse of wings : 32 mm.

1 ♀ Nakheila, R. Atbara, February 9th, 1904.

This species is named in honour of the Hon. Francis R. Henley.

19. **Agrotis segetum** (Schiff.), *Wien. Verz.* p. 81 (1776).

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

20. **Euxoa spinifera** Hüb., *Samml. Eur. Schm. Noct. f.* 389 (1827).

1 ♀, Nakheila, R. Atbara, February 5th; 1 ♂, 4 ♀ ♀, Merawi, N. Sudan, March 12th—15th.

1 ♀, Kerma, N. Sudan, February 25th, 1904.

21. † **Laphygma exigua** (Hüb.), *Samml. Eur. Schm. Noct. f.* 362 (1827).

1 ♂, Nakheila, R. Atbara, February 7th, 1904.

22. **Tatorhyncus vinctalis** (Wlk.), *Cat. Lep. B. M.* xxxiv. p. 1476 (1865)
(S. India, Australia).

1 ♂, Nakheila, R. Atbara, February 6th, 1904.

23. **Heliothis dipsacea** (Linn.), *Syst. Nat.* ed. xii. p. 856. n. 185 (1767).

1 ♀, Kerma, N. Sudan, March 5th, 1904.

24. † **Pandesma quenavadi** (Guen.), *Lep.* vi. Noct. ii. p. 438. n. 1310
(1852) (Sylhet).

2 ♂ ♂, Nakheila, R. Atbara, February 13th, and Kerma, N. Sudan, March 6th, 1904.

25. **Pericyma fasciolata** spec. nov. (Pl. IV. fig. 11♂, 21♀).

♀. *Forewing* : dusty grey ; the basal patch dark grey, edged by a fine concise blackish line ; outer line also fine and concise, at two-thirds, curved in slightly round lower angle of cell, followed by a thick grey line parallel to it ; between the two fine lines the ground-colour is somewhat paler and crossed by three vertical waved dark bands, all bent in cell, the outer two darker and double, the last including in its bend the finely edged reniform cell-spot ; a slight pale submarginal line, followed at apex by a dark blotch ; hindmargin crenulate, slightly marked with black between the veins ; fringe full, dusty grey.

Hindwing : a little paler, with traces of postmedian and submarginal waved lines.

Underside greyish white, with grey speckling ; apex of forewing tinged with grey.

Head, thorax, and abdomen grey; abdomen beneath and legs whitish; palpi internally whitish, blackish externally.

Some ♀♀ are almost wholly brownish grey, with the markings obscured; in one ♀, larger than all the rest and somewhat worn, the ground colour seems to have been mixed with luteous.

♂ with forewing much brighter; the pale grey tints becoming whitish and the dark grey tints blackish, especially towards the two fine lines, which are much more strongly marked. The hindwings are whitish.

Expanse of wings : 24–26 mm.

3 ♂♂, 19 ♀♀. Nakheila, R. Atbara, January 31st, February 13th, 1904.

26. **Grammodes stolidus** (Fabr.), *Ent. Syst.* p. 599. n. 38 (1775) (E. Indies).

1 ♂, Nakheila, R. Atbara, February 1st, 1904.

27. **Synthimia exsiccata** spec. nov. (Pl. IV. fig. 19♂, 30♀).

Forewing : pale ochreous, with a pale brownish tinge, and dusted with brown scales; a pale waved inner line with slight brownish edging; a pale outer line at two-thirds, parallel to hindmargin, recurved above to costa, its outer edge marked by brown dashes on veins; this outer line is preceded by a curved brown fascia widening upwards, and followed by a grey-brown fascia of uniform width, and which reaches costa, margined outwardly by a pale submarginal line; a row of brown marginal spots; fringe ochreous.

Hindwing : white, slightly washed with ochreous; marginal line ochreous; fringe white.

Underside pale glossy ochreous.

Head, thorax, and abdomen ochreous; the corneous frontal spines black.

Expanse of wings : 30 mm.

The description is made from the clearest marked ♀; some specimens are much paler, showing scarcely any traces of the markings.

1 ♂, 3 ♀♀, Merawi, N. Sudan, 13–15th March 1904.

2 ♀♀, Nakheila, R. Atbara, February 5th and 7th.

28. † **Acantholipes circumdata** (Wlk.), *Cat. Lep. B. M.* xv. p. 1763 (1858) (Congo).

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

29. **Eublemma scitula** (Ramb.), *Ann. Soc. Ent. Fr.* (1). ii. p. 26. t. 2. f. 16 (1833) (Spain). (Pl. IV. fig. 29♂).

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

30. **Raparna bipuncta** spec. nov. (Pl. IV. fig. 24♂).

Forewing : white with a faint ochreous tinge; a black dot in the cell and another at the end; fringe concolorous.

Hindwing : white, without the ochreous tinge; fringe white.

Underside white : forewing tinged with ochreous towards costa.

Head and thorax white ; abdomen white tinged with ochreous ; palpi externally ochreous.

Expanse of wings : 16 mm.

Near *R. lactea* Swinh., from India, but smaller.

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

31. **Raparna minima** spec. nov. (Pl. IV. fig. 23♂).

Forewing : whitish, with a greyish ochreous tinge, except along costa, and between the veins finely dusted with grey ; fringe slightly paler, but tinged with grey.

Hindwing : with a slight ochreous tinge, but without grey dusting ; fringe white.

Underside of forewing greyish ochreous, with paler fringe ; of hindwing white.

Head and thorax white ; abdomen whitish ; palpi externally grey.

Expanse of wings : ♂ 13 mm. ; ♀ 15 mm.

2 ♂♂ 1 ♀, R. Atbara, Feb. 3rd—6th, 1904.

32. **Metachrostis badia** (Swinh.), *P. Z. S.* p. 445 (1886) (Mhow).

1 ♀, Nakheila, R. Atbara, February 6th, 1904.

33. †**Plusia limbirena** Guen., *Lep.* vi. Noct. ii. p. 350 (1852) (Cape of Good Hope, etc.).

1 ♂, Nakheila, R. Atbara, February 8th, 1904.

34. **Plusia circumflexa** (Linn.), *Syst. Nat.* ed. x. p. 844. n. 128 (1758) (Europe).

1 ♀, Kerma, N. Sudan, February 26th, 1904.

35. **Galasa pulverulenta** spec. nov. (Pl. IV. fig. 34).

Forewing : dull brownish grey, dusted with darker ; costal edge pale with dark dots ; no distinct lines ; a slight pale discal spot with some dark scales intermixed ; fringe concolorous, with fine dark dusting.

Hindwing : greyish white, darker towards apex ; fringe white.

Underside glossy whitish ; the forewing tinged with greyish luteous in the disc ; the costa ochreous with dark spots ; fringe ochreous ; hindwing and fringe whitish.

Head, thorax, and abdomen pale grey ; the face more whitish ; tarsi fuscous with pale rings.

Expanse of wings : 20 mm.

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

36. **Euchloris dissimilis** spec. nov. (Pl. IV. fig. 27♀).

Forewing : cream-colour, with two thick brown lines curved parallel to hindmargin ; the first from before middle of costa to one-third of inner margin ; the second close to hindmargin ; a slight brown marginal line dotted darker on veins ; fringe concolorous ; cell-spot black, distinct.

Hindwing : paler, with outer line only, and that indistinct.

Underside of forewing tinged with greenish towards costa ; cell-spot dark ; outer line thick and diffuse greenish grey ; the apex dusted with grey.

Head, thorax, and abdomen all whitish.

Expanse of wings : 15 mm.

From the neurulation this must be referred to the subfamily Geometrinae, where it comes nearest to *E. ochrea* Warr. and *aridula* Swinh. ; but in the present species the costal and subcostal of the hindwing anastomose for nearly the whole length of cell, as in *Syndromodes*.

2 ♀ ♀, Nakheila, R. Atbara, Feb. 4th and 7th, 1904.

37. **Syndromodes unicolor** Warren, *Nor. Zool.* iv. p. 45 (1897) (S. Africa).

3 ♂ ♂, 2 ♀ ♀, Nakheila, R. Atbara, February 6th, 7th, 1904.

38. **Microloxia ruficornis** Warren, *Nor. Zool.* iv. p. 42 (1897) (Natal).

1 ♂, 1 ♀, Nakheila, R. Atbara, February 5th, 6th, 1904.

39. **Cosymbia marcida** spec. nov. (Pl. IV. fig. 28 ♂).

Forewing : ochreous with a faint flesh-coloured tint : lines slightly darker, very faint, and often obsolete, parallel to hindmargin ; basal at one-fourth, median at one-half, and outer at three-quarters of inner margin, all becoming evanescent before costa ; hindmargin and fringe deeper, like the lines ; cell-spot white with faintly darker edges.

Hindwing : with costal area pale ; median line only visible, on inner margin.

Underside ochreous, thickly striated with dull pink ; the outer line on both wings curved, pinkish. Head, thorax, abdomen, and legs ochreous ; face pale brown.

Expanse of wings : 20 mm.

5 ♂ ♂, 8 ♀ ♀, Nakheila, R. Atbara, February 5th—9th, 1904.

40. **Ptychopoda crassisquama** spec. nov. (Pl. IV. fig. 36 ♀).

Forewing : ochraceous, dusted with purplish grey scales ; the markings of the same tint, formed by rather coarse scales ; these are a broad antemedian fascia and two waved bands postmedian and submarginal ; some dark irregular scales along hindmargin ; cell-spot small and black ; fringe ochraceous, thickly dusted with grey.

Hindwing : with the base grey ; the space between it and the postmedian band narrow ; cell-spot black.

Underside dull testaceous, the dark tints showing through.

Face and palpi dark brown ; vertex, antennae, and thorax ochraceous ; abdomen ochraceous speckled with purplish.

Expanse of wings : 13 mm.

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

41. **Ptychopoda microptera** spec. nov. (Pl. IV. fig. 37 ♀).

Forewing : stone grey dusted coarsely with dark scales ; costa with a black spot just before the middle, from which an obscure dark median line runs obliquely

inwards to before middle of inner margin ; a smaller costal dot nearer base indicates the commencement of an inner line which appears to curve outwards and touch the median line in midwing ; a similar dark dot towards apex denotes the submarginal line ; a black cell-dot at two-thirds ; fringe dusty grey.

Hindwing : with black cell-dot, and faint inner and outer lines.

Underside pale grey ; cell-spots black in both wings.

Face and palpi black ; vertex, thorax, and abdomen pale grey ; the vertex and shoulders sometimes whiter.

Expanse of wings : 8 mm.

The wings long and narrow ; superficially the insect resembles a small *Tinea*.

2 ♀♀, Nakheila, R. Atbara, February 6th, 1904.

42. ***Ptychopoda granulosa*** spec. nov. (Pl. IV. fig. 38).

Forewing : mealy olive-grey ; lines denoted by a few black scales, most distinct at costa ; first curved at one-fourth ; median slightly curved inwards, more distinct than the rest ; exterior and submarginal only marked at costa ; fringe full, concolorous with wing ; no cell-spot.

Hindwing : with only the median shade expressed.

Underside as upper, but dusted with darker and coarser scales ; median and outer lines marked towards costa.

Head, thorax, and abdomen all olive-grey ; face and palpi black.

Expanse of wings : 10 mm.

Extremely like the preceding species, *P. microptera*, from which it can be at once distinguished by the absence of cell-spots.

2 ♀♀, Nakheila, R. Atbara, February 6th and 12th, 1904.

43. †***Pseudosterrha gayneri*** Rothsch., *Nor. Zool.* viii. p. 433 (1901) (Shendi).

1 ♀, Nakheila, R. Atbara, February 2nd, 1904 (Pl. IV. fig. 10 ♀).

44. ***Zamarada secutaria*** (Guen.), *Lep.* x. Phal. ii. p. 45. n. 969 (1857) (Abyssinia).

1 ♂, 3 ♀♀, Nakheila, R. Atbara, February 4th—8th ; 1 ♀, Kerma, N. Sudan, February 25th, 1904.

45. †***Tephрина disputaria*** (Guen.), *Lep.* x. Phal. ii. p. 489. n. 1710 (1857) (Egypt).
(Pl. IV. fig. 20 ♀, 25 ♂.)

3 ♂♂, 20 ♀♀, Nakheila, R. Atbara, February 5th—11th, 1904.

46. ***Peridela sudanata*** spec. nov. (Pl. IV. fig. 26 ♂).

Forewing : dirty whitish ochreous, with an olive-grey suffusion in basal and marginal areas ; the paler central area dusted with grey striae ; costa dotted with black ; lines blackish, interrupted ; first curved at one-third ; median shade diffuse, passing outside the black cell-spot ; outer line at three-fourths, obliquely curved outwards, black and distinct from costa to vein 6, there angled and oblique inwards, less distinct, to inner margin at three-fourths, followed by a dark cloud, which is marked with a black spot above vein 6 and by a black blotch on submedian fold ; all the other lines similarly blotched along this fold ; an interrupted dark marginal line ; fringe grey.

Hindwing: with blackish cell-spot, and indistinct central and postmedian lines; the submarginal shade broader and complete.

Underside much paler, whitish with a faint yellowish tinge, coarsely grey-speckled; cell-spots black; marginal area grey beyond a smoky-grey submarginal shade.

Head, thorax, and abdomen like wings; centre of vertex, base of shoulders, and tips of patagia blackish.

Expanse of wings: 25 mm.

Forewing with large fovea; hindmargin of hindwing scarcely elbowed at vein 4.

2 ♂♂, Nakheila, R. Atbara, February 7th, 8th, 1904.

47. †**Crocalia aglossalis** Rag., *Ann. Soc. Ent. Fr.* (6). ii. p. 635 (1891) (Karachi).

1 ♂, Nakheila, R. Atbara, February 2nd, 1904.

48. †**Scotomera wollastoni** Rothsch., *Noc. Zool.* viii. p. 433 (1901) (Shendi).

2 ♂♂, Nakheila, R. Atbara, February 7th, 1904.

49. **Pyrallis obsoletalis** (Mann), *Wien. Ent. Mon.* viii. p. 179 (1864) (Brussa).

1 ♂, Nakheila, R. Atbara, February 6th, 1904.

50. **Diplopseustis perieresalis** (Wlk.), *Cat. Lep. B. M.* xix. p. 958 (Borneo).

1 ♀, Nakheila, R. Atbara, February 4th, 1904.

51. **Marasmia trapezalis** (Guen.), *Lep. Delt. ♂ Pyr.* p. 200 (1854) (S. Leone).

2 ♂♂, Nakheila, R. Atbara, February 2nd and 7th, 1904.

52. **Hellula undalis** (Fabr.), *Ent. Syst.* iii. 2. p. 226 (1794) (Italy).

2 ♂♂, Nakheila, River Atbara, February 5th and 7th, 1904.

53. **Nomophila noctuella** (Schiff.), *Wien. Verz.* p. 136 (1776).

4 ♀♀, Nakheila, R. Atbara, February 1st—6th, 1904.

54. **Cornifrons ulceratalis** Led., *Wien. Ent. Mon.* ii. p. 147 (1858) (Damascus).

5 ♀♀, Nakheila, R. Atbara, February 2nd—12th, 1904.

55. **Pachyzancla phaeopteralis** (Guen.), *Lep. Delt. ♂ Pyr.* p. 349. n. 409 (1854) (S. America).

1 ♂, Nakheila, R. Atbara, February 4th, 1904.

56. **Cybolomia pentadalis** Led., *Verh. Z. B. Ver. Wien* v. p. 217 (1855).

1 ♀, Nakheila, R. Atbara, February 5th, 1904.

The present example is much more strongly streaked than the Syrian types. Two examples in the National Collection, however, from Aden are intermediate.

57. **Cybolomia simplex** spec. nov. (Pl. IV. fig. 5 ♀).

Forewing: sandy ochreous (♀), or pale ochreous (♂), unmarked, except by a minute black speck at end of cell, and three or four blackish dots on the pale costal edge; a row of very minute dark dots before hindmargin; fringe slightly grey-mottled.

Hindwing: paler, especially towards base.

Underside pale ochreous: both wings finely dusted with blackish along costa and with minute black marginal dots.

Thorax and abdomen ochreous without dusting; head, antennae, and palpi paler, speckled with black.

Expanse of wings: 16 mm.

1 ♂, 1 ♀, Nakheila, R. Atbara, February 5th, 1904.

58. **Anerastia lotella** (Hüb.), *Samml. Eur. Schm.* Tin. f. 334 (1796).

4 ♂♂, 2 ♀♀, Nakheila, R. Atbara, February 4th—11th, 1904.

59. **Anerastia stigmatella** Rag., *Nouv. Gen.* p. 49 (1888) (E. Indies).

1 ♀, Nakheila, R. Atbara, February 4th, 1904.

60. **Gymnancyla canella** (Hüb.), *Samml. Eur. Schm.*, Tin. f. 289 (1796).

1 ♀, Nakheila, R. Atbara, February 5th, 1904.

61. **Ephestia calidella** Guen., *Ind. Method.* p. 82 (1845) (Hyères).

1 ♀, Nakheila, R. Atbara, February 7th, 1904.

62. **Ephestia figulilella** Gregs., *Entom.* v. p. 385 (1865) (Liverpool).

1 ♂, Nakheila, R. Atbara, February 6th, 1904.

63. **Nephopteryx ferrealis** Hmps., *Ann. Mag. N. H.* (7). i. p. 161 (1898) (Pretoria) (Pl. IV. fig. 40 ♀).

6 ♀♀, Nakheila, R. Atbara, February 6th—13th, 1904.

64. **Salebria metamelana** Hmps., *P. Z. S.* p. 271 (1896) (Aden).

2 ♀♀, Nakheila, R. Atbara, February 4th and 6th, 1904.

65. **Euzophera trigeminata** spec. nov. (Pl. IV. fig. 6 ♀).

Forewing: chalk-white; with a pair of black spots and two pairs of transverse grey lines; first spot on subcostal vein close to base, second at end of cell; first pair of lines antemedian, bent outwards at first, then vertical; second pair beyond discal spot, sinuous and crinkled, darker marked on costa; fringe white, with a slight dark line at base and the apical half grey.

Hindwing: whitish, with grey cell-spot and grey submarginal and marginal lines, not reaching anal angle; fringe white.

Underside of forewing ochreous-tinged, with the cell-spot, two outer lines and fringe grey; hindwing whitish, with the submarginal line and cell-spot.

Head, thorax, and abdomen white, the last somewhat grey-tinged.

Expanse of wings: 17—20 mm.

2 ♀♀, Nakheila, R. Atbara, February 4th, 1904.

66. **Epischnia masticella** Rag., in *Romanoff, Mém. Lép.* vii. p. 498 (1893) (Persia).

1 ♀, Nakheila, R. Atbara, February 5th, 1904.

67. **Epischnia cinerosalis** spec. nov. (Pl. IV. fig. 2♀).

Forewing: pale grey, densely covered with blackish grey scales, except close to base, along an outwardly oblique inner line and a sinuous outer line, which are slightly paler; the inner line is followed by a blacker shade; the outer is strongly bulged outwardly in middle and insinuate beyond cell and on submedian fold; an obscure angled blackish cell-mark; fringe pale grey.

Hindwing: pearly whitish, with a grey cloud at apex and narrow grey line along hindmargin; fringe whitish, with a rather broad grey basal line.

Underside glossy, greyish white.

Head, thorax, and abdomen grey speckled with darker; palpi externally blackish.

Expanse of wings: 22 mm.

1 ♀, Nakheila, R. Atbara, February 8th, 1904.

68. **Heterographis rivulalis** spec. nov. (Pl. IV. fig. 7♀).

Forewing: olive-grey, finely speckled with darker olive and rufous scales; first line from about one-fourth of costa to one-third of inner margin, oblique outwards, pale, preceded by a crinkled line of fine black scales and followed by a fuscous shade; outer line pale, edged on both sides, but more thickly inwardly, with fuscous, indented basewards beyond cell and on submedian fold; some dark scales represent the cell-mark; a marginal line of crinkled black scales; fringe pale grey, with a darker middle line.

Hindwing: pearly white, with fine grey marginal line; fringe white, with grey basal line.

Underside glossy whitish; forewing shaded with rufous grey.

Head, thorax, and abdomen like wings.

Expanse of wings: 19 mm.

1 ♀, Nakheila, R. Atbara, February 6th, 1904.

69. **Eromene ocella** (Haw.), *Lep. Brit.* iii. p. 486 (1812) (Suburbs of London).

1 ♂, Nakheila, R. Atbara, February 2nd, 1904.

70. **Polyocha anerastiodes** spec. nov. (Pl. IV. fig. 3♀).

Forewing: ochreous, overlaid with reddish ochraceous scales; the costal streak remaining pale ochreous without any dusting; fringe concolorous.

Hindwing: pearly white, with an ochreous grey marginal line swollen into a slight cloud at apex; fringe white, with a dark basal line.

Underside of forewing yellowish ochreous ; of hindwing white.

Abdomen like wings ; shoulders, patagia, and face ochreous, like the costal stripe.

Expanse of wings : 35 mm.

2 ♀♀, Shereik, N. Sudan, January 18th, 1904 ; and Nakheila, R. Atbara, February 8th.

71. *Arenipses sabella* (Hmps.), in *Romanoff, Mém. Lép.* viii. p. 501 (1901) (Fao).

2 ♂♂, 4 ♀♀ ; the ♂♂ and 1 ♀ from Nakheila, R. Atbara, February 6th, 7th ; 3 ♀♀ from Merawi, N. Sudan, March 12th—14th, 1904 (Pl. IV. fig. 32, 39, ♀♀.)

The ♂♂ are typical, but the ♀♀ much redder than the Arabian type, and look almost a different insect.

72. *Platytes impar* spec. nov. (Pl. IV. fig. 8 ♂).

♂. *Forewing* : olive-ochreous, with faint darker dusting, this ground-colour showing only in central area and towards apex ; the basal area is filled with very neat dark grey dusting and bounded by a distinct black nearly vertical line at one-third ; outer line from two-thirds of costa to three-fourths of inner margin, outcurved above, then sinuous, more or less parallel to hindmargin ; marginal area filled up with a grey cloud, leaving apex pale ; a line of black dots before hindmargin ; fringe with two fine crinkled grey lines at base and broadly grey beyond, but with a pale patch above anal angle ; a pale spot on costa on each side of outer line ; cell-spot grey, double, hardly visible.

Hindwing : ochreous grey, darker towards apex, with a faint darker outer line and blackish marginal line ; fringe wholly ochreous.

Underside pale ochreous, heavily dusted with dark grey along costa of both wings ; outer line and marginal spots shown ; fringe as above.

Head, thorax, and abdomen ochreous ; palpi externally grey.

♀ much paler ; without dark basal patch and marginal cloud ; the lines faint ; fringe quite pale and hindwing whitish ; the bipunctate cell-mark of forewing plainer.

Expanse of wings : ♂, 13 mm. ; ♀, 16 mm.

The indentation in hindmargin below apex of forewing is much deeper in the ♂.

2 ♂♂, 2 ♀♀, Nakheila, R. Atbara, January 31st—February 7th, 1904.

73. *Alavona semilactea* spec. nov. (Pl. IV. fig. 12 ♂).

Forewing : cream-white ; the markings olive-brown : these are a basal patch with curved outer edge, and a postmedian fascia of irregular shape, the inner half approaching basal patch below middle and sometimes consisting of two arms enclosing a small space of the white ground-colour, the outer running obliquely outward to a dark spot in middle of wing before hindmargin, and diffused to anal angle ; all these brown markings are edged and speckled with black scales ; a curved band of olive and black scales before hindmargin ; fringe deep, olive-brown and white, with a central blackish line ; the white areas are also speckled with black scales.

Hindwing : brown-grey, whitish towards base ; fringe white, with irregularly arranged brownish grey scales on basal half.

Underside olive grey-brown, varied with ochreous white, the pale areas much more restricted than on the upperside.

Head, palpi, and shoulders white; antennae grey, with the shaft white; thorax and abdomen white, partly mixed with olive-grey.

Expanse of wings : 18—30 mm.

9 ♂♂, 1 ♀, Nakheila, R. Atbara, February 4th—8th, 1904.

Perissomastix gen. nov.

Head rough; tongue obsolete; antennae longer than forewing, lamellate, the segments closely appressed, basal segment elongate, swollen; labial palpi well developed, porrect, the segments distinct; second segment haired beneath, terminal as long as second; maxillary palpi obsolete.

Wings shaped and scaled as in *Tinea*. In forewing one vein is wanting—presumably 9; 7, 8 stalked. In hindwing all the veins are present, but 5, 6 are stalked. In the forewing beneath the base of costa bears a small hair-tuft; the costal vein is shortly fringed along basal half; across the cell before middle there is a cushion of thickened scales, showing as a slight prominence on the upperside.

Type : *P. nigriceps* spec. nov.

74. Perissomastix nigriceps spec. nov. (Pl. IV. fig. 9 ♂).

Forewing : fuscous brown, with some paler scales in parts, without markings; fringe paler.

Hindwing : ochreous white, the fringe more ochreous.

Underside of both wings pale glossy ochreous.

Head and palpi black-brown, the palpi pale at the joints; antennae ochreous; thorax and patagia smooth, grey; abdomen greyish ochreous.

Expanse of wings : 19 mm.

1 ♀, Nakheila, R. Atbara, February 5th, 1904.

NEW SPECIES OF *GEOMETRIDAE* FROM THE
AETHIOPIAN REGION.

By WILLIAM WARREN, M.A., F.E.S.

SUBFAMILY ORTHOSTIXINAE.

1. *Cartaletis concolor* spec. nov.

Differs from *C. monteironis* Druce in being paler; a very pale straw-colour, without any reddish tint; the pale blotches of forewing and spots of hindwing in the marginal areas are concolorous with the ground-colour, not bright white.

The underside of abdomen is of the same pale straw-yellow as the wings, instead of dull orange, as in *monteironis*.

Expanse of wings: 52 mm.

1 ♂, 1 ♀ from Zululand, October 1901.

SUBFAMILY GEOMETRINAE.

2. *Nemoria dorsicristata* spec. nov.

Forewing: dull grey-green, the marginal area somewhat paler; cell-spot rather large, dull blackish; outer line darker grey-green, thick, below the middle edged with shining whitish, from three-fourths of costa to four-fifths of inner margin, oblique outwards to vein 6, there bluntly bent, and obliquely waved inwards; a very obscure dark curved shade at one-third; fringe paler, like the margin.

Hindwing: similar, the postmedian line white-bordered throughout.

Underside uniform whitish green.

Face and thorax green like the wings; vertex deeper green; abdomen paler, the third and fourth dorsal segments marked with partially raised black scales edged with reddish; palpi pale with darker tips; fillet and antennae snow-white; legs and underside of abdomen pale; forelegs in front rosy tinged.

Expanse of wings: 22 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

3. *Syndromodes delicata* spec. nov.

Forewing: pale bluish green; the costal edge white; first line curved at one-third; second sinuous from three-fourths of costa to two-thirds of inner margin, but both marked only by white, sometimes obscure, spots on veins; traces of a similar submarginal line; cell-spot small, white; marginal line fine, dark brown, widely interrupted by large white spots at the vein-ends, which are followed by subquadrate grey spots in the pure white fringe.

Hindwing: similar, without first line.

Underside uniform pale green; the costa of forewing whitish.

Face and palpi olive-brown; vertex and antennae white; thorax green; abdomen faded, probably greenish ochreous, with four white, red-edged dorsal spots.

Expanse of wings: 22 mm.

1 ♀ from Durban, Natal (G. F. Leigh).

It is possible that this may be the ♀ of *S. ricida* Warr., but the fringes are quite different.

SUBFAMILY STERRHINAE.

4. *Synelys pudens* spec. nov.

Forewing: glossy, very pale flesh-colour, the lines slightly deeper; the outer line marked by minute dark dots on the veins, projecting at veins 6 and 4; the median shade parallel to it; the inner line curved, very faint; submarginal line fine, waved, between two deeper shades; marginal spots hardly darker between the veins; fringe glossy; cell-spot minute.

Hindwing: without inner line.

Underside glossy whitish; the forewing slightly pinkish to median line and black-speckled; the outer and marginal series of spots and the cell-spots black and distinct.

Face and palpi black above, whitish below; vertex, shoulders, and patagia pearl-grey; collar brown; abdomen like wings.

Expanse of wings: 25 mm.

1 ♀ from Durban, Natal (G. F. Leigh).

Like *S. natalica* Butler, but smaller and less strongly marked.

SUBFAMILY PALYADINAE.

5. *Melinoessa subalbida* spec. nov.

Forewing: dull fulvous, striated with darker fulvous; the lines and ocelloid spot exactly as in *M. croesaria* H.S.

Hindwing: similar.

Underside of the ♂: forewing deep fulvous with darker striae; ocelloid spot and median line shown; marginal area beyond outer line dark brownish fuscous; hindwing cream-white, with a brownish band from apex to middle of hindmargin, and a dark cell-spot. The ♀ has the forewing paler and the hindwing more ochreous.

Expanse of wings: ♂, 42 mm.; ♀, 44 mm.

4 ♂♂, 2 ♀♀ from Entebbe, Uganda, May 1900 (Capt. Rattray).

The pale underside of hindwing will separate the species at once.

SUBFAMILY ABRAXINAE.

6. *Lomaspilis casta* spec. nov.

Forewing: creamy white; a small basal patch with oblique outer edge of mixed chocolate and lilac scales, a narrow suffusion of the same colours extending along costa to beyond middle; a broad submarginal band, its inner edge sinuous,

its outer nearly straight from apex to anal angle, consisting of two thick lunulate-dentate chocolate-brown lines, alternating with two of lilac scales; minute brown marginal dots between the veins: a triangular brown blotch of brown and lilac scales on margin between veins 4 and 6, the apex touching outer edge of fascia, the base expanding fanwise across the cream-coloured fringe; cell-spot black.

Hindwing: similar, but without basal markings; the patch at middle of hindmargin reduced and not extending into the fringe.

Underside with the markings dull brick-red.

Head and thorax brown and lilac, like basal patch; abdomen cream-colour; lower part of face paler; underside of abdomen and legs cream-colour; forelegs reddish in front.

Expanse of wings: 26 mm.

1 ♀ from Shilouvane, Transvaal, November 1902 (H. Junod).

Allied to *L. batesi* Wlgrn.

SUBFAMILY BISTONINAE.

7. *Apocheima fuliginosa* spec. nov.

Forewing: smoky blackish with a faint purplish tinge; costa black, varied with ochreous; lines deep black; first from one-fourth of costa incurved below median towards base of inner margin, the whole basal area deeper black; outer line from three-fourths of costa, sinuous, bent outwards beyond cell and again less strongly on submedian fold, followed by a slight reddish tinge; marginal area deeper black; fringe concolorous; cell-spot black; a very faint median shade is visible shortly before outer line.

Hindwing: similar, but without basal line.

Underside paler, more fuscous, with slight striations; costa of both wings with black striae.

Head, thorax, and abdomen black, the thorax and patagia intensely black; antennal shaft white; the pectinations fuscous.

Expanse of wings: 40 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

This species has been bred. The ♀ is apterous, with a short, thick, club-shaped process only; legs thick and black; abdomen peppered black and ochreous.

SUBFAMILY ASCOTINAE.

8. *Alcis acutangula* spec. nov.

Forewing: greyish ochreous; the ground-colour showing only in the median space, the basal and marginal areas being suffused with pale olive-brownish and thickly sprinkled with dark scales; lines black, very fine; first from costa at about one-third, vertical in the main, to the submedian fold, there bluntly bent nearly at a right angle and running straight to one-fifth of inner margin, preceded by a diffuse brown shade; outer line from two-thirds of costa, acutely angled outwards on vein 5, then incurved, and below vein 3 lunulate-dentate to just beyond middle of inner margin, the outward tooth on vein 1 strongly marked, followed by a thick brown shade; submarginal line pale, wavy, the lunules filled in with brown,

below costa and beyond cell mixed with black, and followed beyond cell by a blackish cloud; marginal festoon finely black, swollen into spots between the veins; a faint brown median shade, visible on costa and inner margin.

Hindwing : similar, without basal line and shade.

Underside grey, speckled with dark; cell-spots and outer line marked; a darker submarginal cloud, becoming dense and black towards costa of forewing.

Face black; vertex, shoulders, and patagia whitish grey with dark speckles; abdomen dark grey; forelegs dark fuscous with pale rings.

Expanse of wings : 48 mm.

1 ♀ from Durban, Natal (G. F. Leigh).

Resembles *Ectropis noctivolans* Butler, from Japan, but the ♂, of which I have lately seen an example, has pectinated antennae.

SUBFAMILY SEMIOTHISINAE.

9. *Gonodela subcretata* spec. nov.

Forewing : blackish with a purplish tinge; crossed by four somewhat deeper bands, the first three narrow and waved, basal, median, and outer, vertical but a little outcurved in middle; the submarginal band is broader, and projects outwards towards hindmargin between veins 4 and 6; costa dotted with pale; fringe concolorous.

Hindwing : with only three bands.

Underside of forewing in basal half golden yellow above median vein, chalk-white below it, thickly striated with purplish, and with a thick purplish median band; outer half of wing and fringe deep purple; a small snow-white spot near hindmargin above vein 6; hindwing bluish white, yellow along costa at base; an interrupted purple median line and purple marginal border, which below middle is split up into two bands.

Head, thorax, and abdomen purplish brown; underside of abdomen, pectus, and legs yellow, the last with purplish flecks.

Expanse of wings : 26 mm.

1 ♀ from Entebbe, Uganda, July 1900 (Capt. Rattray).

Distinguished by the underside from *G. commicta* Warr., which it resembles above.

SUBFAMILY ENNOMINAE.

10. *Eurythecodes fimosa* spec. nov.

Forewing : dirty brown, coarsely dusted and striated with darker brown and black; the lines dark brown; first at one-third bent outwards between subcostal and submedian veins; outer oblique from apex to three-fifths of inner margin, straight to below vein 3, then vertical; shortly before apex it is joined by an oblique streak from costa; it is followed in the lower half of wing by a deeper brown shade, succeeded by a paler submarginal band; cell-spot black; fringe (worn) brown.

Hindwing : with the line postmedian, slightly curved; cell-spot black.

Underside similar, the striae blacker, the lines obscurely marked.

Head, thorax, abdomen, and legs brown.

Expanse of wings : 34 mm.

1 ♀ from Moyamba, Sierra Leone, June 1902 (D. Cator).

11. *Hyposidra leprosata* spec. nov.

Forewing : pale olive-brown ; the costa greyer, dappled with whitish scales ; lines purplish brown ; first from one-fourth of costa, bent on subcostal, then oblique to one-fifth of inner margin, very obscure ; second from beyond middle of costa to middle of inner margin, very sinuous, describing a small outward curve below costa, a large one between 4 and 6, another on submedian fold, and a small one on inner margin, each curve preceded by a patch of hoary grey scales ; a strongly zigzag submarginal line from apex to anal angle, its angles also marked by small patches of hoary scales ; an oblique broad brownish shade from middle of inner margin close before outer line fading out before middle of wing ; fringe and apex of wing purplish.

Hindwing : with all the markings more distinct ; the oblique shade antemedian and entire.

Underside dull lilac ; both wings with broad olive tawny submarginal fascia and central line, that in the forewing running from middle of costa to two-thirds of inner margin.

Vertex, shoulders, and basal segments of abdomen grey ; face brown ; thorax, patagia, and abdomen olive-brown, the latter with a row of whitish dorsal spots ; legs olive-brown, spotted with grey.

Expanse of wings : 78 mm.

1 ♀ from Entebbe, Uganda, July 1900 (Capt. Rattray).

12. *Mesocoela seriata* spec. nov.

Forewing : fawn-colour, speckled with leaden grey ; costa cream-colour, with dark spots at the commencement of the lines ; first line scarcely visible, but marked by dark vein-spots ; outer line straight from three-fifths of inner margin to apex, dull pinkish white, edged inwardly by a dark line marked by black vein-spots and outwardly by a broad olive-grey band : the inner edge is retracted at vein 7 to the third costal blotch ; the olive-grey outer edge runs into apex, and is bordered beneath above vein 7 by a whitish dash ; from the second costal spot a fine grey line curves outward beyond a linear angulated cell-mark, and coalesces with outer line before inner margin ; fringe olive-brown.

Hindwing : with a thick curved median line and a submarginal series of black spots on veins followed by an obscure pale line ; fringe brown.

Underside coarsely speckled, the hindwing and marginal area of forewing more fulvous ; all the lines of upperside repeated.

Face brown, vertex darker ; thorax and abdomen like wings.

Expanse of wings : 44 mm.

1 ♀ from N. Bailundu, Angola, August 1901 (Pemberton).

Metallospora gen. nov.

Forewing : triangular ; costa straight, convex before apex, which is slightly prominent but depressed ; hindmargin faintly sinuate ; anal angle obtuse.

Hindwing : with apex rounded ; anal angle prominent ; hindmargin slightly curved.

Antennae of ♂ bipectinate to three-fifths, the pectinations stiff and ciliated ; palpi short, upturned, not reaching top of face ; tongue and frenulum present ; hind-tibiae thickened, with four spurs ; abdomen apparently with dorsal tufts.

Neuration : forewing, cell half as long as wing ; discocellular vertical ; first median nervule at four-fifths, second close to third ; vein 5 from rather above the middle of discocellular, 6 from upper end of cell ; 7, 8, 9, stalked from just before end ; 10 and 11 coincident ; the median vein is curved upwards near base, the membrane below it forming an elongated double fovea-like depression on the underside, the base of cell being also somewhat distorted : hindwing with veins 3 and 7 both before angles of cell, which is quite half as long as wing.

Type : *M. catori* spec. nov.

The genus is manifestly related to *Hypphysa* Butler, an Eastern genus ; differing in the pectinated antennae and in the distortion of the median vein.

13. *Metallospora catori* spec. nov.

Forewing : roughly scaled, olive-brown ; the lines darker, but obscure ; first at one-fourth, second at two-fifths, both slightly curved, the latter followed by the large oblong blackish cell-spot ; outer line very indistinct, incurved below middle, and reaching inner margin at two-thirds ; submarginal line irregularly waved and clouded ; the costa, cell-mark, fringe, and all the lines are edged with bluish silvery scales, and the whole wing appears to be more or less sprinkled with the same, but this may be due to wearing, as the single specimen is not in perfect condition ; fringe concolorous.

Hindwing : without first line ; the cell-spot smaller, but deep black.

Underside bright ochraceous ; the markings blackish ; these are the second line, the cell-spot, and a diffuse submarginal cloud ; in the forewing this is broad and irregular, lying between veins 2 and 6 ; in the hindwing it forms a narrower band from costa to submedian fold ; costal and hindmargins with a few dark striae.

Head, thorax, and abdomen above olive-brown ; palpi, pectus, legs, and underside of abdomen ochraceous like underside of wings.

Expanse of wings : 34 mm.

1 ♂ from Moyamba, Sierra Leone, September 1901 (D. Cator).

I have named this species in honour of the collector.

14. *Pareclipsis insolita* spec. nov.

Forewing : grey-brown, with darker speckling ; the lines olive-brown ; first from one-fourth of costa to one-fourth of inner margin, acutely angled on the subcostal vein ; median line oblique, nearly straight, passing over the brown cell-spot ; outer line at four-fifths, outwardly curved from costa to submedian fold, then vertical, edged on both sides with pale ochreous ; submarginal line deeply dentate-lunulate, paler, the lunules filled up with brownish, those beyond the cell with blackish ; large black marginal spots between the veins ; fringe grey-brown with a pale basal line.

Hindwing : similar, without basal line ; cell-spot brown, beyond the median line.

Underside greyish ochreous, densely striated with fuscous ; the lines and cell-spots thick and fuscous.

Head, thorax, and abdomen concolorous.

Expanse of wings : 30 mm.

1 ♀ from Moyamba, Sierra Leone (D. Cator).

I refer this to *Pareclipsis* temporarily.

15. *Therapis sordida* spec. nov.

Forewing : dull ochreous, washed with pale olive-fulvous, and densely dusted with black ; first line very indistinct, blackish, from one-fourth of costa curved to near base of inner margin ; outer line from four-fifths of costa, marked by black dots on veins 6, 7, 8, then running as an oblique black line to one-fourth of inner margin, continued as a basal line across hindwing ; a slight linear cell-mark ; submarginal line visible only at the extreme apex, where it is followed by a brown apical blotch reaching vein 6 ; fringe olive-brown.

Hindwing : with traces of dark antemedian and postmedian lines, marked mainly by blackish blotches on inner and costal margins, the latter also by some blackish vein-spots.

Underside paler ; both wings with a thick sinuous antemedian line ; forewing with brown blotch at apex ; hindwing with outer line marked by vein-spots.

Head, thorax, and abdomen concolorous ; face and forelegs olive-fuscous.

Expanse of wings : 52 mm.

1 ♀ from Kassai River, Congo Free State.

Larger than the type species *cronymaria*, otherwise resembling it ; the discovery of the ♂ must be waited for to establish its true position.

NEW *THYRIDIDAE*, *URANIIDAE*, AND *GEOMETRIDAE* FROM SOUTH AND CENTRAL AMERICA.

BY W. WARREN, M.A., F.E.S.

FAMILY *THYRIDIDAE*.

1. *Zeuzerodes fasciata* spec. nov.

Forewing: ochreous, covered with brown striae and shadings, which assume the form of bands parallel to hindmargin; that along hindmargin itself broader and distinct, dark brown at anal angle, broad and paler brown at apex, where it curves round to costa; it is preceded by a distinct pale fascia, and this again by a dark central one which is broader towards costa and angled outwards beyond cell, containing an ill-defined dark cell-spot; basal half of wing crossed by three or four indistinct bands, one of which is marked by a blackish dash in the cell; extreme apex of wing whitish with a few black scales; fringe reddish brown, with darker mottlings beyond veins.

Hindwing: with the central and marginal brown bands very distinct; the pale intervals with irregular lines of brown striae; fringe with basal half dark brown, apical half paler.

Underside the same, the markings on the whole clearer.

Head, thorax, and abdomen dark brown, the shoulders pale ochreous.

Expanse of wings: 40 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., Dec. 1902, wet season (Ockenden).

Forewing acute, hindmargin very oblique, as long as inner margin; hindwing triangular with acute apex.

Distinguished from the other species by the absence of any pale patch at anal angle of hindwing.

FAMILY *URANIIDAE*.

SUBFAMILY EPIPLEMINAE.

2. *Coelura dissocia* spec. nov.

♀. *Forewing*: grey-brown, covered with faint striae, which are distinct only in the marginal area; the produced apex and hindmargin narrowly black-brown; a black-brown line oblique from apex to four-fifths of inner margin, but the line is really retracted close before apex to costa; from two-thirds of costa a straight black-brown line meets the outer line on vein 5; a faint dark cell-dot; the basal line is very obscure, but is strongly curved and bent in cell; fringe dark brown with a pale base.

Hindwing: with a distinct double postmedian line, curved inwards above middle and obsolescent before costa; marginal striae pale, mixed with blackish above anal angle; fringe dark brown with pale base beyond a blackish marginal line.

Underside dull greyish ochreous, striated and suffused with grey brown.

Head, thorax, and abdomen concolorous.

♂. *Wings*: bone-colour, 'speckled and striated with blackish; lines hardly visible; underside ochreous, yellow towards hindmargins, with distinct short black striae between the veins.

Expanse of wings: 30 mm.

1 ♂, 1 ♀ from Palino cué, Paragnay, March (Montforts).

The difference in coloration, both above and below, in the two sexes is remarkable; the ♂ is considerably worn, which may partly account for the obscurity of the markings.

In neuration the ♂ agrees with *Corlura omnia* Druce, and not with the type species *transversata* Warr., veins 2, 3, 4 of forewing rising all separate but near together, and veins 3, 4 of hindwing being stalked; in the ♀ the discocellular of hindwing is vertical, not oblique, and the cell longer.

3. *Erosia veninotata* spec. nov.

Forewing: brown, with black speckling and striation; the lines black, the central area between them slightly darker than the basal and marginal; first line from one-third of costa to one-third of inner margin, strongly outcurved and projecting on vein 4; outer line from before two-thirds of costa to three-fourths of inner margin, curved inwards at first, then from subcostal to vein 4 straight and vertical, obliquely curved inwards to vein 2, then again oblique outwards; this line is edged outwardly by a pale ochreous line, and veins 1, 2, 3, are pale ochreous across the darker fascia; a curve of dark scales before the excision; an undefined submarginal shade of blackish striae and traces of some dark shading in the basal space; fringe worn.

Hindwing: similar, but the inner line is edged inwardly with ochreous, as well as the second outwardly; the angle of the outer line at vein 4 acute; costal half of wing above median vein and vein 4 washed with pale chestnut; the lower half of fascia dark brown, followed by a paler, ochreous, band; a brown line from upper to lower tooth; a broad olive-brown line from base above median vein to angle of outer line.

Underside ochraceous, somewhat darker and striated with black towards hindmargins.

Face and palpi black-brown; vertex and thorax pale fawn; the abdomen darker; underside of abdomen and pectus whitish; legs ochraceous and grey.

Expanse of wings: 48 mm.

1 ♀ from Tuis, Costa Rica.

The markings are differently disposed from those of any of the forms that can be referred to *incendiata* Guen.

Gymnoplocia gen. nov.

Closely resembling *Dirades*, but differing in the following points; the furrow within the fold of inner margin of hindwing is quite bare, showing no trace of a pencil of hair, but instead a short tuft of spreading hairs rises from the base of the inner margin; at the base of cell of hindwing is a large hyaline oval space; costa of hindwing slightly sinuous, without hairs. In the forewing vein 11 is free but upcurved towards 12, without, however, anastomosing.

Type: *Gymnoplocia parvidens* Dogn. (*Epilema*).

4. *Saccoploca excisa* ab.(?) *nigrosticta* nov.

Forewing : less brown, more wood-colour, than in typical *excisa* Warr. ; the costa black ; the commencement of all the lines at costa black-brown, the two brown cross-lines less distinct ; the small dark spots forming the submarginal line swollen into black blotches ; the costal and marginal regions well sprinkled with lustrous blue scales, as in typical ♂♂.

Hindwing : without markings except the two brown cross-lines.

Underside paler, and thickly black-speckled ; cell-spot of forewing black.

Head, thorax, and abdomen concolorous with wings ; face dark brown.

Expanse of wings : 36 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., July 1902, dry season (Ockenden).

Smaller than the type form ; the excision beneath apex of forewing is deeper, and the margin below middle of wing concave, not straight. It is not, as at first seemed probable, the dry-season form of *excisa*, as typical females are to hand, taken at both seasons.

FAMILY GEOMETRIDAE.

SUBFAMILY MECOCERATINAE.

5. *Hyphedyle divisa* spec. nov.

Forewing : white, with a few blackish striae at base of costa ; a broad dull red-brown stripe along middle of wing from base to hindmargin, uniting there with a brown dark-speckled apical patch, the inner edge of which is curved and darker ; fringe brown above vein 3, white below.

Hindwing : white, with sparse brownish striae at base and along inner margin, and a pale brown line from anal angle to vein 4.

Underside of forewing with the stripe smoky grey striated with brownish ; the apical blotch much mixed with white scales varied with dark fuscous rather coarse striae ; a darker blotch on the curved inner edge and on hindmargin below apex : hindwing white with a few speckles ; the line very faint.

Palpi fuscous ; face and vertex white with grey centre ; thorax mainly fuscous, with a few whitish scales intermixed ; abdomen white, speckled with fuscous towards anus ; legs white, dusted with fuscous and with the joints fuscous.

Expanse of wings : 44 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

SUBFAMILY CYLLOPODINAE.

6. *Dioptis vitrifera* spec. nov.

Forewing : iridescent hyaline ; the costa and inner margin both narrowly black ; a black bar straight from before middle of costa to anal angle, broadest above the middle ; the veins in the basal half of wing blackish ; beyond the bar a broad white space, all but touching costa and hindmargin ; the apex of wing black, narrowing towards anal angle ; fringe black.

Hindwing : wholly hyaline ; the veins black ; costal and hindmargins narrowly blackish, thinning out to a point at anal angle.

Underside the same.

Head, thorax, abdomen, and legs black; abdomen beneath whitish; the head parts are damaged; there appear to have been some white scales about the face and vertex.

Expanse of wings: 38 mm.

1 ♂ from Pozuzo, Department Huanuco, Peru (Hoffmanns).

7. *Josia radians* spec. nov.

Forewing: brown-black; costal edge ochreous in basal half, orange at extreme base; a central orange streak from near base, starting from submedian vein below median, but soon enclosing the median, both edges straight, very slightly narrowing to near hindmargin.

Hindwing: with the orange streak broader; its upper edge quite straight, its lower convex from base to origin of veins 3 and 4, where the streak is constricted and becomes narrower, with both edges parallel; inner margin and fringe orange.

Underside with both streaks much broader, in the forewing including the cell; costal edge of both wings orange.

Palpi black, yellow beneath; face, sides of vertex, base of shoulders, some hairs at sides of metathorax, and lateral stripes of abdomen orange; centre of vertex, thorax, abdomen, and antennae black; abdomen below with a whitish streak.

Expanse of wings: 35 mm.

1 ♂ from Onaca, Sta. Martha, 2200 ft., wet season, September—October 1901 (Engelke).

Nearest to *J. fustula* Warr., from Chimbo.

SUBFAMILY GEOMETRINAE.

8. *Mixocera torsilinea* spec. nov.

Forewing: delicate pale green; costal edge snow-white, edged beneath with rufous; the lines brown, very fine, and deeply contorted, so that they appear at first sight double; first close to base, darker dotted on veins and strongly incurved between them; outer line from three-fourths of costa to middle of inner margin, acutely dentate outwards on veins and inwards between them; a large round brown cell-spot; a brown spot close to base of costa; a dark marginal line interrupted at the veins; fringe white at base, rufous-tinged beyond.

Hindwing: without first line; cell-spot large; hindmargin bluntly angled.

Underside pale green, with cell-spots and marginal spots brown; costa of forewing yellowish; fringes pale.

Palpi externally fuscous, internally white; face olive (perhaps faded); fillet and antennae white; patagia deep green; thorax and abdomen pale green; dorsum with a large black spot on basal segment and smaller one on third; foretibiae fuscous, ringed with white; fore and middle knees fuscous.

Expanse of wings: 26 mm.

1 ♂ from Palino cné, Paraguay, February (Montforts).

The antennae of the ♂ are armed with short pale fascicles of cilia, not pectinated; the palpi are short and thick, with the terminal joint quite small, very different from the slender palpi, with long terminal segment, of *Racheospila*.

9. *Oospila depressa* spec. nov.

Forewing: dull green; costal edge ochreous, with a few speckles; two large blotches of flesh-coloured ochreous striated with purplish and broadly edged with the same colour; one at apex, subquadrate, reaching vein 4; the other oblong at anal angle, occupying outer three-fifths of inner margin, its upper edge flat, reaching vein 2 on hindmargin and slightly curved above that vein towards its end; a marginal purple line; fringe ochreous, chequered with purplish beyond veins; cell-spot small, black.

Hindwing: with a lengthened apical blotch reaching from middle of costa to vein 4, its inner edge sinuate, indented on vein 6; anal patch small, reaching vein 2; a raised white cell-spot at upper end of discocellular.

Underside pale whitish green, the blotches showing through; costa of forewing yellowish.

Face and palpi dull red-brown; vertex white; thorax green; abdomen ochreous pink; the dorsum with red-brown crests.

Expanse of wings: 35 to 40 mm.

3 ♀♀ from Tuis, Costa Rica.

Smaller than the allied species; distinguished by the flattened anal blotch of forewing, and the wide green interval reaching to marginal line between the two pale blotches.

10. *Racheospila megastigma* spec. nov.

Forewing: semihyaline green; the costal area diffusely and irregularly red-brown, before the middle emitting from the lower edge a blunt projection to median vein inclosing the discocellular spot, as in *R. dependens* Warr., and at three-fourths an outwardly directed tooth on vein 6; the costal edge narrowly white; hindmargin red-brown, swollen into a bilobed projection between 4 and 6, and gradually broadening again from vein 3 to anal blotch; along the margin this red-brown is preceded by a yellowish tint; fringe (worn) brownish.

Hindwing: with a broad red-brown marginal border, narrowed from 3 to 4, running up narrowly along inner margin nearly to base; cell-spot large, red-brown.

Underside iridescent whitish green, the dark tints showing through.

Face and palpi rosy-red above, pale greenish below; fillet and antennae snow-white; vertex red-brown; thorax green; abdomen red-brown, with snow-white dorsal spots on each segment; legs and underside of abdomen pale greenish.

Expanse of wings: 26 mm.

1 ♀ from Tuis, Costa Rica.

The species is intermediate between *R. dependens* Warr. and *R. bidentifera* Warr.

SUBFAMILY STERRHINAE.

11. *Anisodes ruficosta* spec. nov.

Forewing: ochreous, with neat reddish striations; the shades accompanying the lines greyish brown and diffuse, imparting a general grey tint to the whole wing; costal streak reddish brown, the costal edge marked by black dashes at the commencement of the lines; the subcostal vein dull red; first line marked by six black spots, three in the intervals as well as on the veins; outer line at three-fourths, distinctly marked on the veins; a small dark cell-spot followed by a

cloudy median shade ; submarginal line pale, obscurely indicated by dark shades, close to margin ; a row of dark marginal spots ; fringe ochreous, mottled with reddish brown beyond veins.

Hindwing : similar, but the cell-spot a white oval with dark edge.

Underside of forewing dull rosy, of hindwing straw-colour, rosy-tinged ; all the markings darker rosy.

Face dark brown, paler below ; vertex and shaft of antennae ochreous white ; thorax reddish brown, tips of shoulders blackish ; abdomen like wings ; mouth parts damaged.

Expanse of wings : 26 mm.

1 ♂ from Bartica, British Guiana, June 1901.

Hindtibia with terminal spurs only.

12. *Emmiltis malepicta* spec. nov.

Forewing : dirty bone-colour, with a few black speckles ; costal area and lines very pale brownish ; the first line curved, at one-third ; median and outer parallel to hindmargin, the median from costa at two-thirds, the outer at four-fifths, the latter alone marked by black dashes on veins, that on vein 6 projecting a little outwards ; submarginal line pale between two slight shades ; fringe paler, with very concise black spots at the base beyond the ends of the veins ; cell-spot small, dark.

Hindwing : similar, without first line.

Underside paler and clearer, without speckling ; forewing as far as median line, except along inner margin, testaceous grey ; cell-spots and outer lines blackish and distinct.

Thorax and abdomen like wings, the latter with a few dorsal dark specks ; collar brown ; face and palpi blackish ; vertex and antennal shaft pale ochreous.

Expanse of wings : 22 mm.

2 ♂♂ from R. Colorado, Peru, October 1902 (Watkins).

13. *Haemalea grisescens* spec. nov.

Forewing : pearl-grey, with a slight violet tinge and finely speckled with blackish ; the costa purplish fuscous ; the lines brown, wavy ; first and second nearly vertical at one-third and two-thirds of inner margin ; outer line from three-fourths of costa to four-fifths of inner margin, bluntly projecting above vein 4 and below vein 6 ; submarginal line macular, indistinct, close to hindmargin ; black marginal lunules between veins ; fringe rufous grey ; cell-spot dark brown.

Hindwing : similar, but without basal line ; the cell-spot in a pale space.

Underside glossy whitish, discoloured towards costa of forewing ; cell-spots outer, and marginal lines marked.

Face, palpi, vertex, and shoulders dark brown, the tips of shoulders almost metallic ; thorax and abdomen like wings ; last two segments of abdomen white with brown rings ; fillet and base of antennae snow-white ; abdomen beneath and legs whitish ; forelegs fuscous in front.

Expanse of wings : 26 mm.

1 ♂ from Palcazu, Junin Department, Peru (Sedlmayr).

SUBFAMILY HYDRIOMENINAE.

14. *Anapalta nivesecta* spec. nov.

Forewing: greenish ochreous (probably pale greenish when fresh), crossed by numerous olive-fuscos lines; these are placed almost exactly as in *A. subpulchrata* Warr. (*Epirrhoë*) from Bolivia (cf. *Nor. Zool.* vii. p. 175), from which the present species differs in having the middle of the dark central fascia occupied by a white blotch extending from costa to inner margin, or to vein 1, its edges running parallel to the lines of the outer band, and containing the black cell-spot; the submarginal line is swollen into a white spot between veins 3 and 4, and sometimes also between 2 and 3. In all other respects the species are alike, but on the underside *nivesecta* is more ochreous, with less green.

Expanse of wings: 40 mm.

2 ♂♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

This may very likely be an aberration (or a local form) of *A. subpulchrata*; but as that is from Bolivia and the present form only from S.E. Peru, I have preferred to describe it as distinct. *Gramata* Feld., *batis* Warr., and *niveigutta* Schaus probably stand in a similar relation to *emberizata* Guen.

15. *Hammaptera dispansa* spec. nov.

Forewing: greyish olive-green, slightly speckled; the lines fuscous and blackish; basal patch narrow, limited by two or three dark lines forming a band; the pale band beyond traversed by two or three lines of dark scales; inner band of central fascia at one-third, formed of three dark lines filled in with darker olive, the inner nearly straight, the outer angled outward, on median vein and running out along inner margin as a black point; outer band of three lines, the two inner parallel to each other, angled slightly at vein 6 and more prominently at vein 4, insinuate in submedian interval, the outermost line running widely outwards to vein 4, then incurved; submarginal line irregular and obscure, but preceded by a brown blotch marked with three black lines on costa, by a smaller blotch beyond cell, and a slight shade at anal angle; marginal line of interrupted black dashes; fringe greenish, chequered with dark beyond veins.

Hindwing: smoky fuscous; the hindmargin and fringe paler, greenish.

Underside dirty ochreous-greenish, with traces of a band of three obscure dark lines and a dusky marginal border, interrupted at middle.

Head, thorax, and abdomen dull greenish mottled with fuscous.

Expanse of wings: 35 mm.

1 ♀ from Onaca, Sta. Martha, 2200 ft., September, October 1901, wet season (Engelke).

Nearest to *strenuaria* Wlk.

16. *Hammaptera fumida* spec. nov.

Forewing: pale grey, overlaid with darker olive-grey; the lines dark grey; central fascia with the inner edge well curved and slightly wavy, from one-fourth of costa to one-third of inner margin, the outer edge from beyond middle of costa

running nearly straight and oblique outwards to below vein 4, forming a prominent tooth between 3 and 4, then oblique inwards to two-thirds of inner margin, the oblique upper half blackish; the fascia is filled up with olive-grey, and contains two finer lines and the cell-spot; bands on either side pale, with a dark waved middle line; submarginal line pale, waved, the teeth followed by dark wedge-shaped marks to margin; pairs of rather large dark spots at the vein-ends; fringe pale grey; basal area in the unique specimen ochreous, but this appears the result of a stain, and the natural tint was probably grey.

Hindwing: smoky olive-fuscescent, darker along hindmargin beyond a paler submarginal band; fringe olive-grey, the inner margin dark grey.

Underside smoky grey; marginal bands blackish grey beyond a paler band; cell-spots black; no pale spots at apex or along margin.

Head, thorax, and abdomen olive-grey; inner edge of patagia blackish; dorsum smoky dark grey, with base and anal tufts pale.

Expanse of wings: 34 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

The inner margin of hindwing is short and the anal angle truncated. In the shape of outer edge of central fascia of forewing it agrees with *H. nigrilineata* Warr. from Paraguay.

17. *Hypolepis fulva* spec. nov.

Forewing: greyish ochreous, tinged with bright fulvous; the basal patch, central fascia, and marginal lunules olive-fuscescent; basal patch small, dark on costa and broader, narrowed close to base on inner margin, edged with paler; central fascia obliquely sinuous, with crenulate edges, broadly interrupted by fulvous along the median vein, and indented in cell on its inner edge; above the middle wholly dark, below sprinkled with whitish; both edges margined with a pale brown-edged line; marginal lunules obscure, but edged inwardly with paler, the ends of the veins broadly fulvous; fringe mottled olive and fulvous.

Hindwing: greyish ochreous, with traces of dark central line; fringe spotted with dark.

Underside of forewing dark grey; the veins and a subcostal streak bright fulvous; the grey intervals towards apex dappled with ochreous and dark grey; hindwing whitish striated with fuscescent; cell-spot and interrupted outer line blackish.

Head, thorax, and abdomen fulvous; antennae dark fuscescent.

Expanse of wings: 26 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

18. *Hypolepis fuscata* spec. nov.

Forewing: olive-brown, with dark fuscescent suffusion; costa finely dotted ochreous and brown; the central fascia bordered by two nearly straight pale ochreous bands, starting from subcostal vein, the first at one-third, the second from three-fourths of costa to two-thirds of inner margin, slightly curving inwards; a pale spot above origin of vein 4 just beneath the dark cell-spot; basal patch edged by a darker line slightly bordered with pale; a pale oblique streak from

apex, striated with olive, reappearing again at vein 4, but interrupted between by a large fuscous marginal triangular patch; fringe chequered, olive-brown and ochreous.

Hindwing : dark brownish fuscous, without markings.

Underside of forewing pale lilac-grey; a broad costal streak and the veins towards apex orange; a pale ochreous streak from apex with brown striae, preceded by two darker brown patches: hindwing cream-colour, speckled with brown, the upper veins yellow; a brownish cell-spot and traces of two interrupted lines.

Palpi pale olive-brown; face brown; vertex and collar ochreous; shoulders and patagia dark brown, their tips ochreous; abdomen brown with pale rings; abdomen beneath and tuft ochreous; legs ochreous mottled with dark brown.

Expanse of wings : 22 mm.

1 ♂ from Rio Colorado, Peru, October 1902 (Watkins).

19. *Hypolepis tripartita* spec. nov.

Psaliodes tripartita Warr., *Nov. Zool.* xi. p. 72, ♀.

The ♂ of this species, which I have lately been able to examine, has the tuft of hair on the underside of the abdomen characteristic of *Hypolepis*, to which genus it must be transferred.

20. *Orthoprora albiplaga* spec. nov.

Forewing : reddish brown, this colour restricted to basal third and the hindmargin at apex and anal angle, the rest of the wing occupied by a dull white cloud obliterating all markings, but containing a double blackish spot on costa, indicating origin of an outer line, and a slight spot on discocellular followed by a faint ochreous cloud; along the costa the white is dusted with grey scales; subcostal vein from base reddish fulvous, and a narrow streak of the same colour along inner margin nearly to anal angle; a small grey space at base on inner margin, followed by a double pale line, which below the submedian vein becomes white and curves round as a whitish streak to join the large white area; a faintly paler submarginal waved line is visible in the dark apical and anal areas; dark marginal dashes; fringe brown, with fine pale dashes at veins.

Hindwing : pale slaty-grey, the fringe darker.

Underside very pale slaty-grey, darker along margins; cell-spots dark in both wings.

Head and thorax brownish fuscous; abdomen cinereous; shoulders and tips of palpi pale.

Expanse of wings : 35 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., July 1902, dry season (Ockenden).

21. *Orthoprora balteata* spec. nov.

Forewing : dull vinous, somewhat mixed with greenish; the lines and shades blackish; across the wing in the centre of the central fascia a pale green band runs parallel to hindmargin, much as in the Palaearctic genus *Gonantidea* Swinh. On each side of this band are three blackish lines, the intervals filled up with

vinous, and blackish-tinged in the cell; the outermost of the outer three, forming the edge of the central fascia, strongly dentate outwards, the inward teeth on the veins black and thick, the whole finely edged with greenish and followed by two obscure waved dark lines; submarginal line close to margin interrupted, pale, preceded beyond cell by a triangular velvety blackish blotch, the oblique upper edge of which runs into apex; the space above and below it paler, pinkish-brown; a black marginal line interrupted by the pale veins; fringe greenish; basal patch small, dark vinous edged with blackish; space between it and central fascia broader on costa than on inner margin, curved outwards in middle and edged with black at costa and inner margin.

Hindwing: uniform smoky fuscous, the hindmargin deeper, the fringe paler.

Underside of both wings dull fuscous, with the markings indistinctly darker; cell-spots black.

Head, palpi, and thorax fuscous and rufous; collar rufous ochreous; abdomen cinereous fuscous; metathoracic tuft vinous black.

Expanse of wings: 32 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, November 1902, wet season (Ockenden).

22. *Psaliodes brachiata* spec. nov.

Forewing: ochreous with a slight yellowish tint; the markings dark olive; a basal patch, interrupted on inner margin, its hindmargin rounded; central fascia with its inner edge straight and oblique at two-fifths, its outer irregularly waved, uniting below middle with the central part of submarginal band and that with the subapical triangle; a dark blotch on costa and diffuse cloud at anal angle indicate the ends of the submarginal band; fringe ochreous and olive; the broad Y-shaped band between basal patch and central fascia on the costa is marked with a brown cloud.

Hindwing: dark grey, with central line of underside showing through; fringe paler, chequered with dark.

Underside of forewing dark grey, with a yellowish patch from apex and on hindmargin; hindwing yellow with dark central line and strigae on costa.

Head and thorax ochreous; sides of shoulders and patagia olive-brown; abdomen missing.

Expanse of wings: 17 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

23. *Psaliodes dislocata* spec. nov.

Forewing: dark brown, along the costa finely speckled with yellow; basal area traversed at middle by a sinuous white line; a pale inwardly oblique band at one-third, separating basal area from central fascia, not reaching above subcostal vein; its edges are silvery white, its centre buff, finely bordered with brown scales, and on it lies the black cell-spot; outer line silvery white, double, from vein 7 to 4 bracket-shaped and vertical with some yellowish scales between the two arms, joined externally at vein 5 by a slightly zigzag white submarginal line, which runs obliquely inwards to vein 5, then outwards to hindmargin at vein 4, on which it forms a white arrowhead with a yellow dash on the vein at its centre; all three

lines are interrupted between veins 4 and 2 by the brown ground-colour, reappearing as three parallel white lines acutely angled basewards on the submedian fold, separated by yellow, brown-edged lines; fringe distinctly chequered, dark brown and buff; in the basal patch on the median vein is an elongated dash of buff scales.

Hindwing: dark fuscous, pale along costal edge; cell-spot darker; a slight dark central line; fringe yellow chequered with black.

Underside of forewing dull cinereous; subcostal area and three subapical veins orange-yellow, peppered with grey and white; the three approximated white lines beyond cell well marked: hindwing white with iron-grey striations; cell-spot, median and outer lines dark grey, mixed with yellow scales; the costal edge yellow; fringe as above.

Head and thorax olive-brown with an admixture of paler scales; palpi ochreous, dusted with olive-brown; abdomen fuscous; legs and antennae mottled, fuscous and pale ochreous.

The ♀ is paler throughout, the brown being more broken up by pale scales, especially along the veins.

Expanse of wings: 35 mm.

1 ♂, 2 ♀ ♀, from Santo Domingo, Carabaya, S.E. Peru; the ♀ ♀ dated July 1902, dry season, 6000 ft., the ♂ December 1902, wet season, 6500 ft. (Oeckenden).

Allied to *lisera* and *fractifascia* Dogn., and to *nodosa* and *fractilinea* Warr.

SUBFAMILY ASTHENINAE.

24. *Amaurinia coerulea* spec. nov.

♀. *Forewing*: pale blue-green, with slightly darker green cross-bands; the central area edged by darker green lines and crossed by two others, and so appearing somewhat darker; marginal area with three pale and dark bands alternately; the pale line of ground-colour edging central fascia alone distinct; an obscure dark cell-spot; marginal line fine, dull purple; fringe white; costa slightly mottled dark and light.

Hindwing: similar.

Underside paler, with the darker lines obscurely expressed; costa of forewing slightly discoloured.

Thorax and abdomen like wings; vertex and face darker, olive-green; fillet and base of antennae white.

The ♂ is somewhat darker, more greyish green.

Expanse of wings: ♂ 28 mm.; ♀ 30 mm.

1 ♂, 3 ♀ ♀, from Tucuman, Argentina, May 1902 (Dinelli).

25. *Cambogia trillista* spec. nov.

Forewing: pale ochreous overlaid with light brownish olive: the lines vinous; four antemedian, obscure, being lost in the denser tinting of the base, one close to base, one just before the vinous cell-spot, and two between them; a postmedian band formed of three vinous lines, the inner one regularly lunulate-dentate, the outer bluntly angled on veins 4 and 6 and thickened between; two lunulate submarginal lines, of which the inner has the ends of the lunules thickened into spots; from the postmedian band two vinous streaks run into the fringe, one

along vein 4, the other between veins 7 and 8; fringe chequered with vinous beyond veins and with a very fine basal line.

Hindwing: with two obscure lines near base, followed by the vinous cell-spot; the postmedian band distinct on inner margin, obsolescent at costa; three confused submarginal lines; the whole hindwing is paler, except along hindmargin.

Underside pale ochreous, with all the lines vinous and distinct; base of forewing suffused with vinous.

Head, thorax, and abdomen olive-tinged ochreous; fillet and antennal shaft paler; praeanal segments of abdomen red, continuing the postmedian fascia of hindwings.

Expanse of wings: 17 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

SUBFAMILY TEPHROCLYSTIINAE.

26. *Tephroclystia cuneilineata* spec. nov.

Forewing: basal area dull orange edged by a straight oblique line from one-fourth of costa to one-third of inner margin; the middle of the wing grey, thickly powdered with black; marginal area occupied by four deeply lunulate dark lines with pale intervals; fringe chequered darker and lighter grey, the base darker throughout.

Hindwing: with the inner margin dull orange, the base and costal area whiter; the rest as in forewing; a black marginal line; fringe at anal angle orange.

Underside lilac-grey, powdery; the lines of outer area indistinctly expressed; base diffusely orange-tinged; cell-spots dark on both wings.

Head, thorax, and abdomen all dull orange; legs fuscous, dotted with paler.

Expanse of wings: 24 mm.

1 ♂, 1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

A very distinct species.

SUBFAMILY HETERUSIINAE.

27. *Cerynia cupreata* spec. nov.

Forewing: bright orange-red; the base narrowly black, widening towards inner margin; costal edge black; the apex broadly, the hindmargin narrowly black from middle to anal angle, the inner edge well curved; a black curved postmedian line at two-thirds, thick from costa to middle, then almost obsolete; fringe black.

Hindwing: black, with a broad submarginal crescent orange-red.

Underside of forewing as above, but the costal edge between the line and marginal band whitish; hindwing with the black areas mixed with whitish scales.

Head, thorax, and abdomen deep black; hairs of the face and palpi mixed with orange.

Expanse of wings: 18 mm.

1 ♂ from Pacapampa, near Recuag, Peru, 3500 m., December 1899, wet season (Simons).

28. *Cerynia pamphilata* spec. nov.

Forewing: bright reddish orange; the base, inner margin, costal edge, a curved line just beyond middle, and the hindmargin black; this last band is broad at apex, and narrows off to a point at anal angle; fringe worn, black.

Hindwing: like forewing; basal black area larger.

Underside much paler, fulvous; basal patch, costal streak, and marginal band olive-grey, the cross line with a few black scales; hindwing with all the dark areas of upperside olive-grey.

Head, thorax, and abdomen deep black, with a few pale scales intermixed.

Expanse of wings: 19 mm.

1 ♀ from Huamachuco, Peru, 3200 m., November 1899, dry interval (Simons).

29. *Heterusia ovaliplaga* spec. nov.

Forewing: dull black, paler towards base; costa at extreme base and costal-edge at middle red; from below one-third of costa an oblique whitish streak to lower end of cell, widening downwards, and towards costa clouded with brown scales, separated by the black median vein from a long oval white blotch lying between veins 2 and 3; below three-fourths of costa a slight white mark; fringe black, slightly speckled with white in upper half.

Hindwing: white, with broad black border from half of costa to anal angle; a small dark cell-spot at top end of discocellular; fringe black chequered with white between veins 3 and 6; base of wing narrowly black.

Underside of forewing ruddy brown, with bluish white scales at base, and varied with black scales along costa and at apex, wholly black at anal angle, embracing the oval white blotch, which is larger than above; the white streak at one-third and the white spot at three-fourths both broader and running to costal edge; hindwing with the border browner and speckled with yellow scales, at anal angle with a round patch edged by bluish scales.

Head and thorax brown-black, varied with red scales; abdomen blackish sprinkled with bluish white scales along the sides and white beneath; anal tuft with some red scales.

Expanse of wings: 34 mm.

1 ♂ from Pozuzo, Department Huancayo, Peru (Hoffmanns).

Belongs to the group including *columbi* Th. Mg., and *conon*, etc.

SUBFAMILY DEILINIINAE.

30. *Lomographa extremata* spec. nov.

Forewing: glossy white, very sparsely dusted with purplish atoms, except towards hindmargin, where they are denser, forming a faint submarginal band; the margin itself narrowly tinged with purplish throughout; two grey transverse lines, the inner at two-fifths, erect from inner margin, but not reaching costa, the outer at two-thirds, parallel to hindmargin; costa ochraceous; fringe purplish; marginal line fine, interrupted.

Hindwing: with small black cell-spot and outer curved line; no marginal shade.

Underside of both wings and fringes white; costa of forewing yellowish.

Face, palpi, and antennae brown; vertex, thorax, abdomen, and base of antennae white.

Expanse of wings: 30 mm.

2 ♂♂ from Chanchamayo, Peru (Schunke).

Nearest *L. nubimargo* Warr., but without the black blotch of underside.

SUBFAMILY PALYADINAE.

31. *Aplogompha laeta* spec. nov.

Forewing: bright yellow, with the brown streaks restricted to the costal area; the dark marginal area much broken up, limited inwardly by two irregularly sinuous brown streaks, not touching one another; apical and marginal areas fulvous; a large yellow blotch before middle of hindmargin; fringe fulvous with grey tips; the metallic spots as in *lafayi* Dogn.

Hindwing: wholly yellow; a few brown striae on inner margin only; the submarginal row of metallic spots and marginal metallic line as in *lafayi*; fringe pale fulvous.

Underside paler, with all the markings deep brown.

Head, thorax, and abdomen yellow, spotted with brown; the abdomen with brown segmental rings.

Expanse of wings: 19 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

Smaller and much brighter than typical *lafayi*; I have seen several other examples, all from Chanchamayo; if not a distinct species, it is, at least, a persistent local form, differing as much in one direction from *lafayi* as *oppletaria* Warr. (= *yerma* Dogn.) does in the other.

Cirrhosoma gen. nov.

Forewing: triangular; costa straight; hindmargin straight, hardly oblique; inner margin straight.

Hindwing: kite-shaped, the angle at vein 4 blunt, the hindmargin faintly indented between veins 6 and 7.

Palpi short, blunt; antennae of ♂ ciliated; tongue and frenulum present; antepenultimate segment of abdomen with large lateral tufts of hair.

Neuration: forewing, cell half as long as wing; discocellular slightly oblique, very fine; first median nervule at two-thirds, second close before third; radials normal; 7, 8, 9, stalked; 10 and 11 coincident; hindwing, costal bent down and closely approximated to subcostal for half of cell, 6 and 7 divergent; no radial.

Type: *Cirrhosoma translucida* spec. nov.

The genus is allied to *Berberodes* Guen. and *Ballantiophora* Butler, but in this case the abdomen, and not the wing, is tufted.

32. *Cirrhosoma translucida* spec. nov.

Forewing : glossy white, semi-transparent ; costa gilded and speckled with purplish ; very faint traces of an outer line parallel to hindmargin, the marginal area with faint brownish striae ; fringe white.

Hindwing : with traces of two lines, median and postmedian ; the marginal striae plainer.

Underside all white ; the costa of forewing gilded yellow.

Face, vertex, and palpi deep brown ; thorax and abdomen white ; tufts of abdomen white ; legs white ; forelegs in front brownish.

Expanse of wings : 34 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru (Ockenden).

33. *Ophthalmophora humilis* spec. nov.

Forewing : fawn-grey ; the inner margin from one-third to anal angle yellowish white, the streak pointed towards base and reaching vein 2 at the margin ; a pale mark on discocellular ; a curved diffuse pale streak from two-thirds of costa to end of vein 2 ; fringe concolorous.

Hindwing : with a pale yellowish-white oblique band near base, edged below with buff, and widening to middle of costa ; a broad bluish metallic streak before hindmargin, curving down from beyond middle of costa to vein 6 ; the marginal area beyond it buff ; two embossed ocelli in disc, one between veins 6 and 7, the other nearer hindmargin between 4 and 6, their disc brassy on a velvety black ground, ringed with ochreous ; the inner marginal area peppered with dark and light scales ; fringe pale ochreous.

Underside whitish grey, the forewing with costa and hindmargin darker.

Face, palpi, vertex, and antennae brownish grey ; thorax and abdomen pale grey.

Expanse of wings : 28 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

34. *Opisthoxia argenticincta* spec. nov.

Forewing : chestnut red ; a broad costal streak, the inner margin from anal angle to one-third from base, the discocellular, and the fringe silvery white ; costal edge yellowish.

Hindwing : with a broad oblique fascia near base, the inner margin and the fringes silvery white ; a fine interrupted metallic line close to hindmargin, curving round at costa to vein 6, where it is followed by a small round embossed spot of raised metallic scales edged finely, first with black, and then again with yellow.

Underside of forewing greyish white, diffusely darker along hindmargin ; of hindwing white with a very narrow dark margin ; fringes white.

Head and palpi brownish grey, the vertex paler ; shoulders silvery white ; thorax and basal segments of abdomen chestnut red ; rest of abdomen cinereous, separated by a white bar ; abdomen below, pectus, and legs white.

Expanse of wings : 41 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., August 1902, dry season (Ockenden).

Referred to *Opisthoxia* provisionally, in the absence of the ♂.

SUBFAMILY ABRAXINAE.

35. *Panthera semiconfluens* spec. nov.

Forewing : pale yellow, as in *P. conglomerata* Warr., with a slight olive tinge ; all the marginal spots confluent, sometimes entirely, sometimes with small interspaces of yellow.

Hindwing : uniformly pale yellow ; the apical spot always lengthened along costa and confluent with the two marginal blotches below it.

Head and thorax grey ; base of patagia and centre of thorax pale yellow ; abdomen grey with segmental rings yellow ; sometimes more or less yellow with dark grey blotches, the last two segments always dark grey.

Expanse of wings : 48—52 mm.

10 examples, all ♀♀, from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., July and August 1902, dry season (Ockenden).

Nearest to *P. conglomerata* Warr. from Ecuador, which has all the spots much darker.

SUBFAMILY NEPHODIINAE.

36. *Hyalopola marginata* spec. nov.

Forewing : white, semi-transparent ; costal area above subcostal vein, hindmargin and fringe, and the apex broadly slaty grey ; veins plainly darker ; a grey band from costa before middle to middle of inner margin, where it forms a broad cloud, the upper part more or less obsolete.

Hindwing : with costal area paler grey, the hindmargin and apex as in forewing ; fringe of inner margin in both wings grey. In the dark marginal area of both wings appears a faint waved paler submarginal cloud.

Underside with costal and marginal areas all smoky black ; no trace of transverse shade on forewing.

Head and antennae blackish ; thorax and abdomen grey, the latter darker ; abdomen beneath whitish, with a central dark line ; pectus and femora whitish ; tibiae and tarsi black.

Expanse of wings : 56 mm.

1 ♂ from R. Colorado, Peru, October 1902 (Watkins).

37. *Myrmecophantes assimilis* spec. nov.

Very near to *M. elytia* Druce, differing as follows : the underside of hindwing is without the white submarginal band ; the inner margin of the same wings is white, edged by a brown streak along the submedian fold ; the brown streak along the cell-fold beyond cell is not continued through cell to base of wing.

The face is black, edged laterally and below with white.

Expanse of wings : 56 mm.

1 ♂ from Pozuzo, Department Huancayo, Peru (Hoffmanns).

38. *Nipteria directa* spec. nov.

Forewing : very pale brownish-grey, slightly darker along costa, and more broadly at apex and middle of hindmargin ; the costa and apex with obscure dark striae ; a dark linear cell-mark on upper half of discocellular ; a fine curved brown

line from one-fourth of costa, where it is black, to one-third of inner margin ; outer line thick, distinct, quite straight, from four-fifths of costa to two-thirds of inner margin ; fringe dark grey.

Hindwing : with slight cell-spot and fine outer line curved parallel to hindmargin, but obsolescent towards costa.

Underside of forewing with costal and apical areas browner, densely striated with fuscous ; the two lines of upper surface visible by transparency, but beyond outer line a short curved black line to vein 4, starting from a black costal spot : hindwing almost covered with thick olive-fuscous coalescent striae ; a dark cell-spot and dark curved outer line, nearer hindmargin than on upperside.

Head, thorax, and abdomen dull smoky grey, the last with blackish rings ; legs and antennae blackish.

Expanse of wings : 44 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., July 1902, dry season (Ockenden).

39. *Nipteria dispansa* ab. *infurcata* nov.

Like the type form of *dispansa* Warr., but the outer line is quite simply curved from three-fifths of inner margin to costa shortly before apex, without any traces of the furcation towards costa with the dark suffusion between the two branches which is so conspicuous in *dispansa*. It seems probable that the present will prove to be the more ordinary form, the original type representing a dark abnormality.

2 ♂♂ from Rio Colorado, Peru, October 1902 (Watkins).

40. *Nipteria elongaria* spec. nov.

Forewing : pale creamy-grey ; a fuscous lunule on discocellular ; costa fuscous at base, with a darker subquadrate blotch at one-third, indicating the commencement of inner line ; costa beyond paler ; a larger blotch at two-thirds, from which a fine dentate-lunulate line runs outwardly to vein 4, then parallel to hindmargin, hardly visible above, but plain below ; apex and hindmargin slightly darker grey ; fringe fuscous.

Hindwing : with grey cell-spot, and pale fringe, finely chequered with dark beyond veins.

Underside with all the markings clear ; a brown triangular cloud on hindmargin from apex to anal angle ; a smaller cloud on costa before apex ; the two separated by an oblique pale streak from apex : hindwing dappled light and dark grey, darker in basal two-thirds ; a round pale spot at base of cell ; dark cell-spot, and outcurved postmedian line ; inner margin whitish.

Face and palpi brown ; antennae black ; vertex, centre of shoulders and patagia cream-white ; patagia laterally brownish ; abdomen grey with dark rings.

Expanse of wings : 58 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

A species of distinct appearance, with long narrow wings.

41. *Nipteria fumosata* spec. nov.

Forewing : smoky grey-brown, darker along hindmargin ; costal area dull whitish with a few grey striae ; a black streak at base, and two short curved black

streaks at two-fifths and two-thirds, between which at equal distances lies the blackish cell-spot : the streaks stop short in cell and on vein 5 respectively, and from their ends two very fine dark lines can be traced to inner margin running parallel to hindmargin ; fringe pale mottled with blackish at veins.

Hindwing : with cloudy black cell-spot and dark curved postmedian line, edged with paler ; marginal line dark ; fringe as in forewing.

Underside brighter, the markings clearer ; a blackish cloud before hindmargin between veins 4 and 6 ; costal markings as above : hindwing as above, but covered with distinct fuscous striae.

Head, thorax, and abdomen dull mouse-grey, shoulders and patagia darker, legs and antennae blackish.

Expanse of wings ; 37 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

42. *Nipteria occulta* Warr.

The ♀ of this insect, a specimen of which I have seen from Santo Domingo, S.E. Peru, differs somewhat from the ♂. The markings of the upperside are much less distinct ; the two abbreviated apical lines are hardly visible, and the cell-spots almost absent. On the underside the fulvous triangular space at apex of forewing is more conspicuous than in the ♂ ; while in the hindwing the dark transverse line is followed by a fulvous ochreous area.

The ♀, which is the same size as the ♂, was taken in December 1902, wet season (Ockenden).

43. *Nipteria pallidilinea* spec. nov.

Forewing : semi-hyaline, dull greyish ; costal area and hindmargin broadly grey-tinted ; basal fourth of costa blackish ; cell-spot large, blackish, preceded and followed on costa by blackish curved streaks, indicating inner and outer lines, which are obscurely marked by dark spots on the veins ; the outer of the two blackish costal spots is followed by a dark grey spot before the dark grey marginal border, which is limited internally by a faint curved pale line ; fringe chequered dark and light grey.

Hindwing : striated with grey, with black cell-spot and curved postmedian pale line, beyond which the margin is darker ; a dark marginal line ; fringe grey, mottled black beyond veins.

Underside the same, but all the markings blacker ; the veins black ; the outer pale line distinct on both wings.

Head, thorax, and abdomen blackish grey.

Expanse of wings : 35 mm.

1 ♂ from R. Colorado, Peru, October 1902 (Watkins).

Easily distinguished by the pale outer line and neat grey shading.

44. *Nipteria subbrunnea* spec. nov.

Forewing : semi-hyaline, whitish ; costal area pale brownish grey, widening towards apex which is broadly grey, the dark tint narrowing to anal angle ; fringe brownish grey ; a distinct dark cell-spot and outer line oblique from costa to vein 6.

Hindwing: whitish, the outer half showing grey from the dark undersurface; fringe dark grey.

Underside like upper, with the dark tints distinctly brownish-tinged; hindwing with outer half dark brownish, traversed by a diffuse dark line curved parallel to margin.

Thorax and abdomen luteous grey; face and vertex pale ochreous.

Expanse of wings: 34 mm.

1 ♂ from R. Colorado, Peru, October 1902 (Watkins).

Apparently allied to *N. hija* Dogn., but larger, and decidedly brownish.

45. *Penthophlebia subvenata* spec. nov.

Forewing: white with a faint luteous tinge; veins towards hindmargin brownish; costal area pale luteous; a faint grey mark on upper half of discocellular, and half-way between it and apex the commencement of a grey submarginal line; fringe like wings.

Hindwing and fringe altogether whitish.

Underside with all the veins well marked, brownish, also the discocellular lines and the submarginal line below costa of forewing.

Head, thorax, and abdomen whitish, the head parts with a luteous tinge; tibiae and tarsi dark fuscous.

Expanse of wings: 45 mm.

1 ♂ from R. Colorado, Peru, October 1902 (Watkins).

SUBFAMILY SELIDOSEMINAE.

46. *Ischnopteris conjungens* spec. nov.

Forewing: dark fuscous, with a purplish tinge, and speckled obscurely with darker; the inner and outer lines whitish green and narrow; first from near base of costa to one-third of inner margin, bent on submedian fold; basal area with a large black blotch between median and submedian veins, sparsely edged with whitish scales; outer line from three-fifths of costa, vertical to middle, bluntly bent outwards between 3 and 4 and inwards on the submedian fold, then curved inwards and coalescing along inner margin with the inner line; central area with two dark oblique blotches on each side of the median vein; cell-spot black, just beyond outer line, and on inner margin above and below vein 1 a patch of white black-speckled scales; submarginal line acutely dentate, the teeth filled up with blackish and edged with white; this white edging forms a blotch above anal angle and on costa is tinged with luteous; marginal area reddish-tinged, especially along veins 3 and 4, the space between them greenish; marginal lunules blackish; fringe concolorous.

Hindwing: uniform dark fuscous, with traces of a central line; underside of forewing fuscous, with an ill-defined darker submarginal shade; marginal area mixed with ochreous, becoming quite ochreous at apex; hindwing paler, with dark postmedian and submarginal shades and ochreous marginal area.

Head and thorax purplish fuscous; abdomen reddish grey with ochreous anal tuft and dark dorsal crests; foretibiae reddish mottled with black.

Expanse of wings: 44 mm.

1 ♂ from Santo Domingo, Carabaya, S. E. Peru, 6000 ft., November 1902, wet season (Ockenden).

47. *Ischnopteris projectata* spec. nov.

Forewing : deep purplish, striated with darker, in the disc with some green scales intermixed; the inner and outer bands green, in the latter case sometimes mixed with whitish scales; the inner band from quite near base of costa to one-third of inner margin, angled outward on submedian fold; the outer band broad and diffuse from middle of costa to two-thirds of inner margin; the purple area between the green shades crossed at middle by a twice outcurved darker median line, the purple tint beyond it being deeper; the edge of the central space is vertical to cell, then strongly projecting below vein 4 and oblique inwards; the cell-spot, of raised dark scales, stands on the outer edge of the green shade; submarginal line interrupted in middle, greenish or greenish white at costa and above inner margin; the purplish marginal area slightly tinged with green beyond cell; marginal spots dark; fringe purplish.

Hindwing : dark purplish fuscous, paler along costal area, with traces of dark curved postmedian and submarginal lines.

Underside ochreous overlaid with blackish grey, with dark median and outer lines and broad submarginal band; the apical region, the costa, and two postmedian blotches, one in cell, the other on submedian interval, paler; hindwing ochreous speckled with black, with postmedian and submarginal black shades.

Head and palpi purplish and fuscous; thorax green; abdomen cinereous; legs reddish testaceous, coarsely black-mottled.

Expanse of wings : 52 mm.

5 ♂♂ from Santo Domingo, Carabaya, S. E. Peru, 6000 ft., December 1902, wet season (Ockenden).

This species is much like *pevatata* Moeschl. from Surinam, for which at first I mistook it; but the points of difference seem too great. All the examples yet seen are ♂♂; all the examples of *viridifascia* are ♀♀; and though the outer green band is quite different in position, form, and width, in the two forms, it is possible they may be sexes of one species. The ♂ agrees with *pevatata* in having the fringe of inner margin of hindwing very full, and in addition a ridge of hair scales along the outer half of vein 1.

48. *Oenoptila* ? *subconfusa* spec. nov.

Forewing : bright orange, speckled with vinous; the inner and hindmargins broadly suffused with dull vinous; a vinous spot at middle of base; first line at one-third, vertical, consisting of three vinous spots on the veins ending in a blotch on inner margin; median shade vinous, from just beyond middle of costa, oblique and straight outwards to vein 4, then bent and vertical to two-thirds of inner margin; outer line from two-thirds of costa, parallel to median, consisting of vinous spots on the veins, those towards inner margin marked with black dashes outwardly tipped with white; an indistinct submarginal vinous shade; fringe vinous like the suffusion, which leaves the extreme apex orange; cell-spot black and large.

Hindwing : wholly diffused with vinous; all the lines, except first line, marked but more or less obscured; no cell-spot.

Underside dull ochraceous, irregularly blotched and speckled with dull vinous, darkest along the hindmargins; cell-spot of forewing blackish.

Vertex, collar, shoulders, patagia, thorax and basal segments of abdomen fiery orange ; face and palpi deep ferruginous ; abdomen cinereous.

Expanse of wings : 39 mm.

2 ♀♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., January and October 1902, dry season (Ockenden).

In the second ♀ the speckling and blotches forming the lines are blackish instead of vinous, like the cell-spot.

Very much like *Oenoptila interrupta* Warr. (*Petelia*) from Brazil, with which I have hitherto confused it, but the undersides are quite different ; in *interrupta* the forewing beneath has a subquadrate dark apical patch.

49. *Oenoptila subfasciata* spec. nov.

Forewing : dull fulvous, striated, not speckled, with blackish ; the lines diffuse, vinous, and as in *subconfusa* the inner and outer lines marked by blackish spots on veins ; the position of the lines is the same as in that species, but the median shade is closer to the cell-spot and nearly vertical throughout ; cell-spot black and large ; a blackish blotch on submarginal line below middle.

Hindwing : with the outer lines marked, and the cell-spot distinct and black.

Underside yellowish straw-colour, almost without speckling ; cell-spots black and large ; a submarginal vinous fascia with its centre blackish.

Head, thorax, and abdomen dull greyish fulvous ; the abdomen with anal segments and laterally grey

Expanse of wings : 39 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

The difference in the underside will distinguish this species at once from both *subconfusa* and *interrupta* Warr.

50. *Thysanopyga nigricosta* spec. nov.

Forewing : pale reddish-grey, with very fine dark striae ; a broad purplish-black costal streak ; the basal area, the cell and space below, and the marginal area above vein 5 brick-red ; first line brown close to base, vertical ; second line well before middle, reddish brown, vertical to below median vein, then slightly curved outwards to inner margin before middle, closely followed by the black cell-spot ; outer line purplish black from three-fourths of inner margin, hardly concave outwards, curving just before reaching the black costal streak and running through it into apex ; below costal streak at apex the hindmargin is pale grey inwardly edged by two white lunules ; fringe reddish grey with pale base, chequered white below apex and above vein 5.

Hindwing : without lines ; cell-spot minute, snow-white in a diffuse brownish shade from before middle of costa, preceded and followed by a brick-red tint in midwing ; a brown cloud at apex and anal angle, preceded by a band of pale ground-colour.

Underside greyish ochreous, speckled with black, with a broad submarginal brownish cloud on both wings ; cell-spots black ; extreme apex of forewing pale.

Palpi greyish ochreous with dark scales, the tips white ; face brown ; fillet and

base of shoulders purplish black like the costal streak ; patagia, thorax, and rest of shoulders brick-red ; abdomen grey, tinged with red along dorsum ; antennae black ; legs grey.

Expanse of wings : 44 mm.

Several examples from Santo Domingo, Carabaya, S.E. Peru (Ockenden). I have previously passed this species as a form of *abdominaria* Guen., but it is a distinct species, characterised at once by the black costa.

SUBFAMILY ASCOTINAE.

51. *Bronchelia consimilis* spec. nov.

Of the same size and colour as *B. puellaria* Guen., but the whole surface thickly studded with leaden-grey and fuscous granular dots ; the lines more distinctly marked, especially towards costa, the inner and outer with black dashes on veins ; the brownish olive shade between outer and submarginal line, as in *puellaria*, and distinctly extended to margin between veins 4 and 6 ; cell-spot black. In the hindwing there are five dull olive-brownish lines or bands, one antemedian passing over the black cell-spot, a postmedian dentate lunulate line marked with black points on veins, followed by a broader shade, and two submarginal bands enclosing the usual pale submarginal line.

Underside cream-white, in the forewing speckled and dusted with grey, the costa striated with black, the cell-spot black ; a black submarginal band, thick to vein 4 and extended to margin between veins 4 and 6, constricted below 4 and ending in a blotch at vein 2 ; in hindwing this band is narrow, dentate externally on veins, from costa to vein 4, then fading off.

Head, thorax, and abdomen whitish, mixed with olive-grey.

Expanse of wings : 74 mm.

1 ♀ from Jalapa, Mexico.

The white is creamy, not bluish, as in *puellaria*.

52. *Bronchelia plumbilinea* spec. nov.

Very much like *B. scolopaiea* Drury [from the West Indian Islands, but the upper surface of the wings is altogether without the erect hairs so characteristic of that species ; the lunulate submarginal line is composed of pale lustrous scales, the lunules filled in with blackish, except that between veins 3 and 4, of which the scales are leaden-grey.

The ochraceous underside has a diffuse black submarginal cloud in both wings broader in the hindwing ; the forewing is thickly and coarsely speckled with blackish, and has all the lines blackish, the double submarginal line being connected with the submarginal fascia by a blackish blotch ; the hindwing by comparison is without speckling or lines.

Expanse of wings : 86 mm.

1 ♂, Santo Domingo, Carabaya, S.E. Peru, 6000 ft., January 1903, wet season (Ockenden).

I have seen examples from several localities in S. America which have hitherto been passed over as *scolopaiea*.

53. *Bronchelia semicompleta* spec. nov.

Forewing : white, semi-transparent, with a few fine grey speckles, which are thickest near base and along costa; the lines dark grey, obscurely marked, but starting from distinct dark costal spots; first from one-third of costa to one-fourth of inner margin, oblique parallel to hindmargin, forming an outward curve above and below the median; second from two-thirds of costa to middle of inner margin, curved outwards above and marked by dark dots on veins; cell-spot grey; submarginal line waved, pale, between two dark shades from costa to below vein 5, and less marked from 3 to anal angle; slight dark marginal dashes; fringe white (damaged).

Hindwing : with cell-spot and dentate-lunulate outer line grey; submarginal line and shades less conspicuous.

Underside white; the costal spots only distinct; forewing with a quadrate apical blackish blotch, with curved inner edge, reaching nearly to vein 4, and a blotch between 2 and 3 not touching margin; hindwing similar, but the apical blotch longer and narrower, the lower one very obscure.

Head and palpi grey; shoulders pale grey; thorax and abdomen white, the segments of the latter with grey rings; legs white; pectus and forelegs in front grey.

Expanse of wings : 64 mm.

1 ♂ from Palino cné, Paraguay, February (Montforts).

Distinguished from both *paellaria* Guen. and *detexta* Wlk. by the narrower and more pointed forewings, and the greyer scaling.

54. *Cymatophora suberinita* spec. nov.

Forewing : olive-tinged ochreous, the markings dark olive-green; costa with short dark green striae; all the shadings parallel to hindmargin, thick and interrupted along the course of the median vein; the submarginal also by an oblique pale streak from apex; a dark spot at base of costa; first line represented by a spot on costa, a triangular one in cell, and a lunule below median vein, preceded by a paler space edged by a darker line; cell-spot contiguous to a subquadrate olive patch with a dark costal spot obliquely above it beyond middle, and a large lunule below median preceded by a dark line; these markings appear to represent the median shade; outer shade lunulate from three-fourths of costa, below median coalescing irregularly with the median shade; submarginal line lunulate, the lunules filled up with darker and followed by diffuse olive shading; marginal lunules blackish, horseshoe-shaped; fringe pale ochreous.

Hindwing : ochreous, with a diffuse grey submarginal cloud; fringe both of the outer and inner margin yellowish ochreous.

Underside ochreous, irregularly blotched with olive fuscous; a large quadrate apical blotch, the apex itself being pure ochreous, and another at anal angle; the submarginal fascia of hindwing olive fuscous; cell-spots black.

Head, thorax, and abdomen ochreous, the head and shoulders olive-tinged; palpi externally and tips of the shoulders fuscous.

Expanse of wings : 44 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6—10,000 ft. (Bottger).

The fringe of inner margin of hindwings is double and thickly curled at anal angle; a ridge of ochreous hairs runs along vein 1, and ochreous hairs are scattered over the base of wing; the segments of the abdomen beneath are all tufted, and the

pectus and femora are hairy; the basal joint of palpi is conspicuous with a rounded fringe of outstanding hairs. The insect bears a great superficial resemblance to *muraena* Druce.

SUBFAMILY SEMIOTHISINAE.

55. *Semiothisa crassisquama* spec. nov.

Forewing: ochreous, covered with coarse olive-brown striations; the costa yellowish with fine brown striae; the lines brown, starting from oblique brown costal blotches at one-fifth, two-fifths, and three-fifths; the first and second lines thick and diffuse, the second touching the brown discal mark, the third narrower, crenulate, angled on vein 6; at four-fifths of costa a fourth brown blotch, inwardly oblique and broadened to vein 6, commences a submarginal shade which is interrupted beyond cell by a fulvous patch and continued as a brown streak to inner margin; marginal area suffused with brown and fulvous; between veins 6 and 7 the ground-colour on each side of the brown marks is white; a row of blackish marginal lunules; fringe yellowish, chequered with brown at the veins, wholly brown beyond cell.

Hindwing: without basal line; the submarginal band uninterrupted, mixed with fulvous throughout; hindmargin below middle paler.

Underside white, striated with brown: costa and veins of both wings yellow; markings as above, but clearer; the fulvous patch beyond cell of forewing conspicuous; apex of hindwing leaden-grey.

Head, thorax, and abdomen olive ochreous, varied with darker.

Expanse of wings: 25 mm.

1 ♂ from Palino cué, Paraguay, February (Montforts).

Hindmargin of forewing without excision; of hindwing bluntly toothed at middle; antennae shortly pubescent; forewing without fovea.

56. *Semiothisa orthodisca* spec. nov.

Forewing: semi-transparent, pearl-grey, striated and partly tinged with dark grey; lines blackish; first at one-fifth, bent in cell, then inwardly oblique; second at two-fifths, waved, parallel to first line; discal mark dark chestnut-brown, oblique, and black edged on both sides, sharply cut at vein 4 and above produced to the costa; outer line from two-thirds of costa to three-fourths of inner margin, waved, and dark-marked on veins; succeeded by a broad fascia with waved external edge, chestnut-brown to vein 3, then dark grey, narrowed to anal angle; it is slightly edged with whitish and followed by a white dash above vein 6; marginal area iron-grey; marginal line black; fringe brownish grey with a white fleck at apex.

Hindwing: without inner line; cell-spot round and black; submarginal fascia wholly dark grey; fringe dark grey with pearly base.

Underside brightly white; all the striae and markings very distinct; submarginal fascias both brown-tinged; costa of forewing yellowish.

Head brown; palpi brown mixed with ochreous; thorax and patagia pale grey; shoulders pale grey with the tips dark; legs greyish white, dark-mottled.

Expanse of wings: 39 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

Subapical excision of forewing slight; hindwing with prominent angle in the middle; forewing with small but distinct fovea; antennae simply pubescent.

57. *Xenocista lapidata* spec. nov.

Forewing: ochreous stone-colour, speckled with black; lines darker, but all very indistinct; basal line at one-fifth, bent in cell; second nearly straight, parallel to hindmargin, a little before middle, passing beyond the equally obscure cell-spot; outer line at three-fourths, marked by dark spots on the veins, not reaching costa, followed by an obscure shade; dark marginal dashes before the ochreous fringe.

Hindwing: without inner line; all the others plainer.

Underside yellower ochreous, with the middle line and a broad submarginal fascia brown; the fascia in forewing extended to margin beyond cell.

Head, thorax, and abdomen concolorous with wings.

Expanse of wings: 30 mm.

1 ♀ from Organ Mountains, near Tijuco.

Hindmargin of forewing oblique: of hindwing bluntly angled at middle.

This species will almost certainly prove to be a *Xenocista*, when the ♂ is discovered.

SUBFAMILY ENNOMINAE.

58. *Anisoperas albimorsa* spec. nov.

Forewing: grey, striated with black; the central area with an olive-fusca tinge; first line dark fuscous, from one-third of costa to two-fifths of inner margin, somewhat excurved above and below median vein, preceded by whitish grey scales; outer line from three-fourths of costa to two-thirds of inner margin, strongly dentate-lunulate, running outwards to vein 7, then sinuous, the teeth on the veins marked by white dashes; a white curve on costa beyond it and another white blotch before apex; on vein 5 within the outer line is a subquadrate cream-white blotch, and between veins 6 and 7 are two smaller cream-white spots, one on each side of the outer line; costal edge striated with ochreous; cell-spot blackish; fringe dark olive fuscous in basal half, paler beyond.

Hindwing: with an olive-fusca tinge throughout, striated with blackish and with a few whitish grey speckles; cell-spot and outer line as in forewing; a small whitish lunule instead of the subquadrate blotch; marginal area narrowly darker, owing to black striae; fringe as in forewing.

Underside cinereous-fusca with dark striations; cell-spots and outer lines dark; all the white spots repeated.

Head, thorax, and abdomen like wings; fillet narrowly whitish.

Expanse of wings: 26 mm.

1 ♀ from R. Colorado, Peru, October 1902 (Watkins).

59. *Azelina fulvata* spec. nov.

Forewing: greyish fulvous, the costal streak pale drab with brown points; lines fuscous, diffuse; first straight, at one-third, bent inwards and obscure on subcostal vein, preceded by a pale grey line; outer line obliquely curved from four-fifths of costa to two-thirds of inner margin, outwardly edged with grey; cell-spot blackish, with a minute whitish centre; black submarginal dots; fringe greyish fulvous.

Hindwing: fulvous only along hindmargin, the rest pale ochreous yellow; a

brown straight postmedian line from above anal angle to before apex, faintly edged externally with pale ; an obscure dark cell-spot ; fringe brownish fulvous.

Underside of both wings pale fulvous above middle, striated with brown ; below middle whitish ; outer line brown and distinct on both wings through the fulvous areas ; cell-spot an elongated oval with pale centre.

Head, thorax, and abdomen pale fulvous.

Expanse of wings : 34 mm.

1 ♀ from Onaca, Sta. Martha, 2200 ft., September—October 1901, wet season (Engelke).

Forewing with hindmargin toothed at 3 and 6, the apex also produced ; hindwing toothed at vein 3.

60. *Certima strigifera* spec. nov.

Forewing : brown, covered throughout with short fine yellowish and grey striae ; a diffuse darker brown, less striated, shade at one-fourth and three-fourths, at the place of the usual lines, the latter edged outwardly by white dashes on veins ; costa broadly cream-colour ; fringe concolorous.

Hindwing : similar ; the outer line as on forewing, but forming the outer edge of a slightly darker postmedian fascia.

Underside dirty ochreous, thickly striated with grey ; a grey cloud in cell of forewing, and a submarginal grey cloud on both wings, the apex of each wing being whitish grey.

Head, thorax, and basal segment of abdomen brown ; rest of abdomen grey ; fillet cream-colour.

Expanse of wings : 48 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., July 1902, dry season (Ockenden).

61. *Cimicodes angustipennis* spec. nov.

Forewing : brownish fawn-colour, always paler than in any of the forms of *pallicostata* Guen. ; the costal streak olive-ochreous with grey freckling ; lines and markings as in *pallicostata*, but the white dot on vein 6 in the outer line is much less conspicuous, and the outer line itself is slightly curved outwards before reaching inner margin.

Hindwing : with the line sinuous and running outside of, or touching, the distinct black cell-spot.

Underside pale fawn-colour, speckled with darker, and tinged with brownish along hindmargin, with indistinct outer and submarginal lines marked by dark vein-points ; the outer line concave outwards ; apex of forewing whitish.

Face and palpi dark brown ; vertex, shoulders, and basal half of thorax and patagia olive-ochreous, like costal stripe ; rest of patagia and thorax dark brown ; abdomen paler brown.

Expanse of wings : 56 mm.

4 ♂♂ from San Ernesto, Bolivia, 1000 m., August and September 1900 (Simons).

The forewings are very decidedly narrower than in *pallicostata* ; the hindwings rounded.

This is the insect which, in *Noc. Zool.* xi. p. 137, I wrongly referred to *latata* Guen., which is certainly the ♀ of *pallicostata*.

62. *Cimicodes ferruginea* spec. nov.

Forewing : dark chestnut brown, paler, tinged with olive and grey, between first and second line, and deep ferruginous between second and submarginal lines ; costal streak bright ochreous straw-colour, along costal edge tinged with olive, and with very few dark speckles ; the inner and outer lines pale lilac grey, both concave outwards, the central space towards the lines deeper brown ; cell-spot black in a lilac-grey oval ; submarginal line starting as a fine sinuous white line at costa, then grey, inwardly edged with black-brown ; the outer line runs straight into the pale costal streak, and both are without white vein-dots ; fringe grey-brown, with pale tips.

Hindwing : with the costal area and the inner margin up to first line olive grey-brown with dark striae ; the rest of the wing deep ferruginous ; submarginal line dark brown, irregularly dentate ; margin from anal angle to vein 4 deep brown ; fringe as in forewing ; inner line passing over the black cell-spot.

Underside dull olive-brown, with dark speckles ; outer line marked by white vein-dots ; submarginal dentate-lunulate, blackish edged with pale grey.

Head, apical two-thirds of patagia and thorax, and abdomen deep brown ; shoulders and basal third of thorax and patagia pale green ; legs dull orange speckled and ringed with black.

Expanse of wings : 52 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

Distinguished from all other species of the genus by the bright ferruginous tinge and strikingly pale costa.

63. *Euclysia carneata*.

Phyllodonta carneata Warr., Nov. Zool. xi. p. 166 (1904).

This species was wrongly referred by me to the genus *Phyllodonta* : it is a true *Euclysia* ; and the ♂, which I have now seen, is like the ♀. The species comes nearest to *Euclysia maculata* Warr., originally described as a *Paragonia*.

64. *Isochromodes straminea* spec. nov.

Forewing : pale straw-colour, speckled with fine rust-coloured scales ; the lines of this same tint, all more or less parallel to hindmargin and lunulate-dentate ; first from one-third of costa to one-fourth of inner margin, obscure ; median thicker, more diffuse, followed on inner margin by a round greyish blotch ; outer line indistinct and interrupted, marked chiefly by brown dashes on the veins, followed by a grey blotch between 3 and 4, thence incurved and running into the grey blotch of median line ; submarginal line also marked by brown vein-spots only, and ending in a grey cloud ; cell-spot small and black, beyond a lunule of the median line ; fringe concolorous, with slight brown dots at the vein-ends ; hindmargin not crenulate.

Hindwing : similar, but without basal line ; the markings all less distinct.

Underside pale straw-colour, brown-freckled towards costa only ; a dark grey submarginal line, obscurely lunulate-dentate on both wings, running in from vein 3 to 2, and there ending, followed in both wings beyond cell by a grey cloud.

Head, thorax, and abdomen straw-colour; face white with the upper part brown; pectus, legs, and abdomen beneath all straw-colour.

Expanse of wings : 44 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., July 1902, dry season (Ockenden).

65. *Isochromodes turbinata* spec. nov.

Forewing : pale luteous-grey, slightly speckled with brown; the markings all dull chestnut brown; a thick diffuse band at about one-third, sinuous, bent outwards in cell and inwards on submedian fold, coalescing along inner margin with a broad postmedian band, the costal half of which, except the edges, is paler; the inner edge of this band starts from middle of costa, is angled outwards on the median vein, then runs obliquely inwards; its outer edge from five-sixths of costa is vertical to vein 4, projects strongly outwards between 4 and 5, and then curves inwards to two-thirds of inner margin; within the inner edge is a small black cell-spot; submarginal line pale, indistinct, marked by irregular brown shadings on each side, below 4 touching the projection of the brown band; a fine brown marginal lunulate line; fringe pale with dark dots at base beyond veins.

Hindwing : similar, but without inner line; the cell-spot ringed with paler.

Underside cream-white, sparsely sprinkled with dark scales; marginal line darker; forewing with dark cell-spot and smoky fuscous shade from costa to hindmargin at vein 2, containing an obscure dark line across it parallel to hindmargin to vein 2, this shade hardly visible on hindwing.

Head, thorax, and abdomen grey; face darker.

Expanse of wings : 44 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

In shape and markings this species resembles *I. maculosata* Warr., but is totally different in coloration; beneath it somewhat resembles *I. grisea*, but the ground-colour is not so white, and there is no shade on hindwing.

66. *Loxapicia cognata* spec. nov.

Forewing : pale ochreous, speckled with dull brownish; the lines pale brown; first before one-third, angled in cell shortly before the small black cell-spot, then oblique to one-fourth of inner margin, preceded by a broad grey shade; outer line from apex to just beyond middle of inner margin, sinuous, being faintly bent in cell and on submedian fold, and slightly curved outwards between those points, followed by a broad grey shade; submarginal line represented by dark dots on veins, of which those on veins 1, 2, 3 alone are conspicuous; fringe ochreous, with minute dark dots at base beyond the veins.

Hindwing : with the inner line distinct, curved, close to base, but without a grey shade; the rest as in forewing; cell-spot black, close before outer line. The brown speckling is densest in the marginal area of each wing and along costa of forewing.

Underside like upper; the shades broad and conspicuous; the submarginal and outer uniting above middle in forewing.

Head, thorax, and abdomen ochreous ; abdominal segments with brown dorsal marks.

Expanse of wings : 26 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

The antennae are heavily pectinated ; in the forewing vein 1 is swollen and upcurved at base.

In general appearance the species resembles *Mesedra*.

67. *Melinodes fulvitincta* spec. nov.

Forewing : mustard yellow, with coarse brown-black speckles ; the lines blackish ; first from one-fourth of costa to one-third of inner margin, bent on subcostal, then vertical, projecting outwards on the three veins, inwardly diffusely edged and tinged with fulvous ; outer line from three-fourths of costa to two-thirds of inner margin, sinuous, dentate-lunulate, the teeth marked with white-tipped black dashes on veins, curved outwards to vein 6 and there acutely angled ; submarginal line lunulate-dentate with prominent outward projections on veins 6 and 3, insinuate between ; the space between these last two lines filled in by a shade of brown and fulvous with black speckling, constricted in middle ; fringe yellow ; slight brown spots at end of veins ; cell-spot brown, rather large.

Hindwing : without first line ; the blotched shade beyond outer line broad below middle, narrow above towards costa ; marginal spots large.

Underside paler yellow, with the dark markings dull grey-brown.

Face brown, vertex yellow ; shoulders brown, their tips fulvous ; thorax and patagia yellow ; abdomen yellow, tinged with fulvous and coarsely black-speckled along dorsum. Underside of body and the legs yellow.

Expanse of wings : 36 mm.

1 ♀ from Tucuman, Argentina, May 1902 (Dinelli).

68. *Numia deceptrix* spec. nov.

Forewing : dull grey-green, densely covered with deeper green scales ; costal edge finely white with dark dots ; a dark cell-spot ; fringe concolorous.

Hindwing : with a small round white cell-spot.

Underside paler, luteous green, the speckling sparser but clearer.

Head, thorax, and abdomen like wings.

Expanse of wings : 29 mm.

4 ♀♀ from Tucuman, Argentina, May 1902 (Dinelli).

In forewings the lower radial rises somewhat above the middle of the discocellular, as in the *Geometrinæ* proper ; but the hindwings are without a radial at all.

69. *Paracomistis maculata* spec. nov.

Forewing : yellowish ochreous, sparsely dusted with black ; a black spot at base of cell ; the lines marked by black dots on veins ; first at one-fourth ; outer line from just before apex to middle of inner margin, the line being concave outward from vein 7 to 4, then oblique and more or less connected ; submarginal series of dots parallel to margin ; from vein 4 to inner margin an oblique blotch

of black speckles runs between outer and submarginal lines, the median shade also being marked in black below the median vein, and a black shade just beyond the outer line ; apex with some black scales and a few along the lower submarginal spots ; marginal spots black ; cell-dot small ; fringe concolorous.

Hindwing : similar, but without basal line and with the median shade distinct and straight from vein 6 to inner margin, touching the black cell-dot : the dots of the outer line connected, and followed by a black blotch at anal angle as far as vein 3.

Underside paler, slightly speckled ; cell-spots and those of the outer and marginal series only represented ; a dark submarginal shade in upper half of forewing.

Head, thorax, and abdomen concolorous ; palpi externally blackish ; patagia with a dark mark across middle, thorax and abdomen spotted with black ; hinder part of abdomen blotched and ringed with black above and beneath.

Expanse of wings : 44 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

70. *Polla fuscata* spec. nov.

Forewing : dark olive-brown with blackish striae ; a thick black line from inner margin at one-sixth to apex, marked by white scales above vein 6 ; a black cell-spot ; just before it an oblique dark streak from costa preceded by a few pale scales indicates the inner line ; beneath the oblique line in the middle of wing is a diffuse dark shade ; costal edge ochreous brown with black dots ; fringe in basal half distinctly reddish, in apical half white.

Hindwing : with two obscure curved dark lines beyond middle, ending above anal angle and accompanied there by a few pale scales : extreme base pale, edged by the continuation of the oblique black line of forewing.

Underside dark lilac-grey with black speckles ; the marginal area broadly brownish fuscous, except at apex of forewing, which remains grey.

Head, thorax, and abdomen like wings ; pectus and abdomen beneath grey ; tarsi fulvous ochreous with black rings.

Expanse of wings : 36 mm.

1 ♂ from Palcazu, Department Junin, Peru (Sedlmayr).

Trotogonia gen. nov.

Forewing : costa curved at base and before apex, nearly straight between ; apex rounded ; hindmargin oblique, not curved, to vein 2, excised between 1 and 2, as long as inner margin, which is somewhat convex.

Hindwing : shouldered at base and excised at apex from 8 to 7, which forms a blunt projection ; hindmargin faintly curved ; anal angle square.

Antennae of ♂ bipectinate, the pectinations being long fascicles of cilia, themselves strongly ciliated laterally and at apex, the shaft rasped above and the segments angulated ; palpi short, closely appressed to face ; tongue and frenulum present ; hindtibia with four spurs.

Neuration : forewing, cell half the length of wing ; discocellular nearly vertical ; first median nervule a little beyond one-half, second close to third ; lower radial from above middle of discocellular, upper from the depressed end of

cell ; 7, 8, 9 stalked ; 10, 11 stalked : hindwing, costal and subcostal only shortly approximated towards base ; 3 and 7 well before angles of cell.

Type : *Trotogonia subornata* spec. nov.

71. *Trotogonia pallidata* spec. nov.

Forewing : pale ochreous with a greenish tinge, suffused with dull purplish at base and along costa and hindmargin ; the bands and markings almost identical with those of *T. subornata*, but the paler ground-colour shows up more before as well as beyond the second line and on hindmargin below apex ; the costa, instead of being smoothly scaled, is marked with dark greenish striae, and the white scaling edging the purplish bands is more developed.

Hindwing : paler, ochreous tinted and speckled with greenish and purplish ; the markings also as in *subornata*, and with a pale centred greenish cell-spot in addition.

Underside pale yellowish with the markings purplish and with scarcely any fulvous tinge.

Head, thorax, and abdomen ochreous tinged with violet ; face brown ; abdomen beneath yellow.

Expanse of wings : 30 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

Besides its smaller size and paler coloration this species differs structurally from the type species in that the antennae are not bipectinate, but merely subserrate and shortly ciliated.

72. *Trotogonia subornata* spec. nov.

Forewing : with the dull primrose ground-colour almost entirely suffused with pinkish violet and with a greenish tinge throughout ; the costal area above subcostal vein rather paler and the hindmargin deeper ; first line as an olive-green band finely edged with whitish scales, bluntly bent outwards in cell, then oblique inwards ; second line diffuse, starting from a purplish costal blotch at four-fifths, sinuous inwards to beyond middle of inner margin, where it is greenish, both extremities finely edged with white ; submarginal line also starting from a purple wedge-shaped blotch just before apex, edged with white and ending at the anal excision in some more white scales, accompanied by a purplish and olive blotch below middle and a small purple blotch before anal angle, and with two round pale spots, the upper one yellow, above and below vein 2 ; fringe purple ; cell-spot obscure, ocelloid, greenish with dark edge, just before the second line ; space between second and third lines dull primrose below vein 6.

Hindwing : a mixture of diffused violet and olive, more violet towards base and inner margin, with a slightly darker band from middle of inner margin accompanied there by white scaling ; a purple blotch at the apical excision and spot below it, both edged with white, and three purplish spots in a line from costa before the excision.

Underside much gayer ; the paler areas of forewing bright fulvous and yellow, the bands purplish, the hindmargin deep purple, with one yellow spot, the costal

area duller ; hindwing fulvous at costa, below it tinged with violet grey, the apical margin deep yellow, with the five purple spots.

Palpi and face deep ferruginous ; vertex, thorax, and abdomen a mixture of dull violet and olive ; anal segment ochreous yellow ; underside of abdomen bright fulvous.

Expanse of wings : 35 mm.

1 ♂ from San Cajetano, Colombia, 8000 ft., September 1902.

The following species was omitted in its proper place ; it belongs to the *Eucestiinae* :—

73. *Callipia balteata* spec. nov.

Forewing : dull smoky fuscous ; the costa with broad, coarse, yellowish striae and spots, the apical area variegated with fine, longer striae ; at two-fifths and three-fifths two larger yellow spots give rise to two broad, deep rosy bands, the inner vertical to the median vein, then oblique inwards to vein 1, above which it runs inwards, widening to base ; the outer vertical to vein 5, then oblique and straight to vein 1 at two-thirds ; yellow marginal dashes at the ends of the veins running out and chequering the fuscous fringe.

Hindwing : with obscure pale striations ; a pale cell-spot on upper arm of discocellular ; a curved outer band, narrow and pale ochreous above, widening and dull rosy below ; margin and fringe as in forewing, the veins paler towards margin ; fringe of abdominal margin dull rosy.

Underside of forewing like upper, but the yellow striae and costal spots, as well as the brown ground-colour, more vivid and concise ; the veins towards margin yellow ; hindwing bright brown, with fine yellow striae ; cell-spot, veins, and abdominal margin for two-thirds white ; the outer band yellow and broader ; ground-colour along the cell and submedian fold blackish brown ; costa yellow ; some rosy spots at base of wing.

Face, palpi, and shoulders rich velvety black ; collar yellow, tipped with scarlet ; patagia yellowish ; thorax olive-brown ; abdomen black, with broad yellow belts ; legs dark fuscous, internally paler, the femora fringed with yellow hairs, the coxae with red hairs.

Expanse of wings : 65 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., January 1902, dry season (Ockenden).

A remarkably coloured insect.

On p. 487 of *Nor. Zool.* xi. I described *Perixera impudens* from Gardner Island. The insect came from Gardener Island, Galapagos, and therefore should have been put among the American species.

AN ACCOUNT OF THE REPTILES AND BATRACHIANS COLLECTED BY MR. F. W. RIGGENBACH IN THE ATLAS OF MOROCCO.

BY G. A. BOULENGER, F.R.S.

(Plates I. II.)

TAKING stock of our knowledge of the Reptiles and Batrachians of Morocco in 1890,* I deplored the almost complete absence of data concerning their distribution on the Atlas. This desideratum has now fortunately been filled to some extent by the energetic collector to whom we are already indebted for important additions to our knowledge of the fresh-water Fish-fauna of Morocco, described in this Journal by Dr. Günther.†

As may be seen from the following list, Mr. Riggenbach's collection does not contain types of any new species, but it is interesting for the rediscovery of the little-known *Ophisaurus koellikeri*, and as extending our knowledge of the variations of the two common lizards, *Lacerta ocellata* and *L. muralis*.

Mr. Riggenbach's collection was made at three different localities :—

Imintanout, foot of Atlas, May 1904.

Dellaïn Diruchan, May 1904.

Tamaruth Valley, High Atlas, 6000-7000 feet, June 1904.

REPTILES.

1. *Agama bibronii* A. Dum.

Several specimens, Dellaïn Diruchan and Tamaruth Valley.

The præanal pores of the males may form two series. A large female has the ventral scales faintly keeled and four tranverse series of large brick-red spots on the back.

2. *Ophisaurus koellikeri* Gthr. (Pl. I. fig. 1).

Three specimens from the Tamaruth Valley.

Teeth in the jaws obtusely conical; minute teeth on the palate, forming one series on the palatine bone and two on the pterygoid. Dorsal scales in 16 longitudinal and 98 to 112 transverse series. The smallest specimen is unspotted, but bears three dark longitudinal bands, whilst the two others have, in addition to these, more or less regular transverse series of black and pale blue spots.

The largest specimen measures 200 mm. from snout to vent; head, 27 mm.; rudimentary hind limb, 4 mm. The tail, when intact, measures two-thirds of the total length.

This species was only known from the type specimen described by Günther from a specimen believed to have been received from Mogador, and from two specimens from Casablanca, the types of Boettger's *Pseudopus apus*, forma *ornata*.

3. *Trogonophis wiegmanni* Kaup.

Tamaruth Valley.

* *Trans. Zool. Soc.* vii. p. 95.

† *Nor. Zool.* viii. p. 367, and ix. p. 446.

4. *Lacerta ocellata* Dand. (Pl. I. fig. 2, and Pl. II. fig. 1).

Nine specimens from Imintanont, and one from the Tamaruth Valley.

From Morocco, this species has only been reported from the neighbourhood of Tangier, and the specimens were referred by me to a distinct form named var. *tangitana*, distinguished from the Algerian-Tunisian *L. pater* by a combination of characters : smaller occipital, smaller or more numerous dorsal granules, fewer rows of ventral plates, and more numerous femoral pores. The *L. pater* itself could only be distinguished from the typical European *L. ocellata* by a combination of characters, every one of which, taken singly, proved to be inconstant. The specimens collected by Mr. Riegenbach in the Morocco Atlas appear to me to dispose entirely of previous attempts at defining geographical races in this species. As will be seen by the following tabulation of characters, the specimens agree with the typical form and *L. pater* in the number of granules across the middle of the body, and with the lizard described as var. *tangitana* in the number (6 or 8) of longitudinal rows of ventral plates, and in the number (16 to 22) of femoral pores.* In some specimens the dorsal granules are very distinctly keeled, in others they are perfectly smooth; and whilst in one specimen the occipital shield is not broader than the interparietal, in five out of ten it is actually broader than the frontal.

In the following tabulation of characters of the ten specimens in Mr. Riegenbach's collection, column 1 gives the number of dorsal scales across the middle of the body, 2 the number of longitudinal rows of ventral plates, 3 the number of transverse rows of ventral plates, 4 the number of gular scales on the median line between the chin-shields and the collar-plates, 5 the number of femoral pores (right and left), 6 the greatest width (in millimetres) of the frontal shield, 7 the greatest width of the interparietal shield, and 8 the greatest width of the occipital shield.

	1.	2.	3.	4.	5.	6.	7.	8.
♂	75	6 8	30	28	19	6	3	6
"	71	8	29	27	19-17	6	3	7
"	74	6	27	26	20-19	6	4	8
"	70	6	29	25	17	5	3	4
♀	81	8	28	26	21 22	5	3½	5
"	79	8	31	25	17 16	6	4	6
"	79	6	28	24	16 17	5½	3	6½
"	70	8	28	26	17-18	5	3	6
Young	72	8	29	28	19-22	3½	2½	4
"	77	8	29	29	19-18	3	2½	2½

The coloration varies much. The young are marked with white, black-edged ocelli, which persist more or less in females and half-grown males, whilst they nearly entirely disappear on the body of adult males, which are uniformly speckled and vermiculated with black. One of the female specimens, figured on Pl. II., is

* I have examined a great number of specimens from Algeria and Tunisia, including those described by Lataste as *L. pater*, and find the femoral pores to vary between 12 and 16; whilst I find 17 to 21 in the 12 specimens from Tangier and Tlemsen (Prov. Oran), which are referred to my var. *tangitana*. Werner, *Verh. Zool. bot. Ges. Wien*, 1894, p. 81, found 13 to 17 pores in 13 specimens from Algeria (Lambesa, Philippeville, Batna, Bona). According to F. Doumeigue (*Essai sur la Faune herpétologique de l'Oranie*, 1901, p. 121), the number of femoral pores would not be a safe character for defining races of this species, as he finds them to vary, in individuals from the province of Oran, between 13 and 20; 11 to 16 is the number ascertained by me in the European specimens.

remarkable for the interruption of the black network on the middle line of the back, thus producing the effect of a light vertebral stripe.

5. *Lacerta muralis* Laur. (Pl. II. fig. 2).

Numerous specimens from the Tamaruth Valley.

This species, so far as Morocco is concerned, was only known from Tangier, whence numerous specimens of a very small-scaled form (with 61 to 73 keeled granules across the middle of the body) were sent to me by M. H. Vaucher.* The specimens from the Atlas of Morocco belong to a somewhat different form, agreeing with the Algerian specimens† in the smooth or faintly keeled scales, 53 to 65 in number across the middle of the body, and the more numerous femoral pores (17 to 21 on each side instead of 13 to 19). The colour is grey or yellowish-green, with two more or less distinct whitish streaks on each side, the upper extending to the supraciliary edge, the lower passing through the eye, separated by a dark-brown band or by crowded black spots; the space between the upper light streaks is at least as great on the body as on the nape; as in the Tangier form, the dark dorsal spots, if present, are never confluent into a vertebral stripe, as is so frequently the case in the typical form of the wall-lizard in Central Europe; the black ventral spots, if present, are small and restricted to the sides. Four is the normal number of upper labial shields in advance of the subocular; out of 47 specimens, 5 anterior upper labials occur, on one side only, in 3, whilst the number is reduced to 3 on one side in one specimen; the so-called masseteric disk is usually present and often large, but it is totally absent in one specimen‡; the edge of the collar shows no trace of denticulation, forming a perfectly even border: 23 to 30 scales and granules along the middle line, between the symphysis of the chin-shields and the median collar-plate; 23 to 28 lamellar scales under the fourth toe. The caudal scales are rather strongly keeled; there are 26 to 39 in the fourth or fifth whorl behind the granules of the anal region. In about half of the specimens the series of granules between the supraocular and the supraciliaries may be described as complete, entirely separating the second (first large) supraocular from the supraciliaries. In 9 specimens the parietal does not touch the upper postocular. §

I append particulars of 20 specimens from the Tamaruth Valley, and of the 6 specimens from Tlemsen collected by Dr. J. Anderson. 1, number of scales across the middle of the body (ventrals not included); 2, transverse series of scales

* Cf. *Trans. Zool. Soc.* xiii. 1891, p. 125.

† In his excellent account of the Reptiles collected by himself in Algeria, the late Dr. J. Anderson says (*P. Z. S.*, 1892, p. 13) that the specimens from Tlemsen, Prov. Oran, agree very closely with the specimens from Tangier described by me, differing however in the femoral pores varying from 17 to 21. I find the scales larger and smooth or very indistinctly keeled, and append particulars of these specimens for comparison with those from Morocco. These Tlemsen specimens represent the "variété verte" of Doumergue (*op. cit.* p. 124).

‡ It is much smaller or altogether absent in most of the Algerian specimens (Tlemsen, Sersou, Daya, Setif, Aumale) examined by me.

§ Prof. L. v. Méhely, *Ann. Mus. Hung.* ii. 1904, p. 367, attaches far too great a value to this character for the distinction of the European species of *Lacerta*. He claims to have examined many hundreds of specimens of *L. muralis* and *L. vivipara* without having ever come across a single one in which the postocular does not touch the parietal. I myself have seen over fifty specimens of *L. muralis*, from France, Spain, Portugal, and Italy, which offer exceptions to the rule, and it so happens that the day the Professor's important paper reached me, I also received three *L. vivipara* from the Carpathians of Moldavia, one of them showing the same exception, which I find likewise in a few examples from Sweden, Belgium, Black Forest, and Carniola.

corresponding to one ventral plate ; 3, longitudinal rows of ventral plates ; 4, number of plates in collar ; 5, number of femoral pores (right and left).

TAMARUTH VALLEY.

	1.	2.	3.	4.	5.
♂	57	3-4	8	9	18-19
"	61	3-4	6	8	17
"	58	3-4	8	9	20-21
"	61	3-4	6	10	17-18
"	53	3	8	8	18-20
"	55	3	6	8	19-18
"	65	3-4	6	10	20-19
"	59	3-4	8	10	20
"	61	3-4	6	10	17
"	60	3-4	6	9	18
♀	64	3-4	6	8	20-21
"	55	3	6	9	18
"	55	3	6	8	19-17
"	56	3	6	10	18-17
"	58	3	6	8	17
"	59	3-4	6	9	19-18
"	59	3-4	6	8	19-20
"	60	3-4	6	9	20-19
"	58	3-4	6	9	19-17
"	56	3-4	6	10	17

TLEMCEN.

	1.	2.	3.	4.	5.
♂	65	3-4	6	10	21
"	61	3-4	6	8	18
"	56	3	6	11	18-17
"	60	3-4	6	10	19-18
♀	57	3	6	9	19
"	55	3	6	11	18

Measurements of the largest specimens from the Tamaruth Valley, in millimetres :—

	♂	♀
Total length	140	129
Head	13	10
Width of head	8	7
Depth of head	6	5
From end of snout to fore limb	20	17
Fore limb	51	46
Hind limb	18	15
Tail	27	22
	89	83

6. *Psammodromus algirus* L.

Tamaruth Valley.

7. *Acanthodactylus vulgaris* D. & B.

Tamaruth Valley.

The two specimens collected by Mr. Riegenbach have smooth or faintly keeled scales, and the subocular does not border the month.

8. **Eumeces algeriensis** Peters.

Dellaïn Diruchan.

9. **Chalcides ocellatus** Forsk.

Tamaruth Valley.

The single specimen belongs to the form named *polylepis*, Blgr., and has 34 scales round the middle of the body.

10. **Chalcides mionecton** Boettg.

Tamaruth Valley.

11. **Chamæleon vulgaris** Daud.

Tamaruth Valley.

12. **Tropidonotus viperinus** Latr.

Tamaruth Valley.

Sc. 21 ; V. 159 ; C. 67.

13. **Macroprotodon cucullatus** Geoffr.

Tamaruth Valley.

Two specimens :—

♂. Sc. 23 ; V. 166 ; C. 44. Upper surface of head and nape entirely black, the black extending as a complete collar across the throat ; belly and lower surface of tail with black spots.

♀. Sc. 23 ; V. 181 ; C. 44. Head with dark brown markings, those on the nape not extending across the throat ; belly with black dots ; a black median streak along the lower surface of the tail.

14. **Psammophis schokari** Forsk.

Tamaruth Valley.

♀. Sc. 17 ; V. 185 ; C. ?. Uniform brown above ; lips and throat with blackish dots ; belly white, with scattered minute blackish dots.

BATRACHIANS.

1. **Rana esculenta** L.

Dellaïn Diruchan.

Three specimens referable to the *R. ridibunda* Pall., one without, the two others with a light vertebral stripe.

	1.	2.	3.	4.	5.
♂ . . .	61	32	33	8	3 $\frac{1}{2}$
♀ . . .	77	36	37	11	3 $\frac{1}{2}$
" . . .	75	35	36	10	3

1, Length, in millimetres, from snout to vent ; 2, length of tibia ; 3, length of foot ; 4, length of inner toe ; 5, length of inner metatarsal tubercle.

SOME UNDESCRIBED LEPIDOPTERA.

[By Hon. WALTER ROTHSCHILD, Ph.D.]

PAPILIONIDAE.

11. *Papilio philoxenus melanurus* subsp. nov.

♂. Agreeing in the shape of the hindwing with the broad-tailed Indian summer-form of *P. philoxenus*, namely *P. ph. philoxenus* f. temp. *dasarada*; the white patch R^1-R^2 much reduced, and on the upperside shaded over with black scales like the half-moon R^2-R^3 ; red spots R^3-M^2 small, spots R^3-M^1 being farther away from margin than in f. temp. *dasarada*; tail without a trace of a red spot above and below.

Hab. Mt. Wuchi, and Wuteryang, Hainan, May 1903; 2 ♂♂.

NYMPHALIDAE.

2. *Charaxes nandina*.

♂. *Charaxes nandina* Rothschild & Jord., *Nov. Zool.* viii. p. 403. n. 7. t. 9. f. 2 (1901) (Kikuyu Escarpment).¹

We described this insect from two ♂♂ collected on the Kikuyu Escarpment by the late W. Doherty. Among the Lepidoptera collected by his assistants shortly before his death, and sent later on to Tring, there were two more ♂♂. Some time ago we received a small collection of Lepidoptera from Nairobi, below the Kikuyu Escarpment, through the kind intermediary of Dr. E. A. Heath, containing a fine ♂ and a ♀ of *nandina*. This ♀ is very close to that of *Charaxes siphæres* from the Cape Colony, rendering it probable that *nandina* and *siphæres* are geographical forms of the same species. So far no representative has been found in the intervening countries. There are eight white postdiscal dots on the upperside of the forewing, the sixth standing well separated from the white discal patch M^1-M^2 ; the white spots outside the apex of the cell are smaller than in *siphæres*, the buff area of the hindwing is posteriorly reduced, being separated from the abdominal fold by a broad black interspace. The area is whitish behind, and externally broadly shaded over with black between R^2 and M^2 . There are three small buff discal dots $C-R^2$ outside the median area. The *underside* is more olivaceous than in *siphæres*; the row of white postdiscal spots is more strongly angulate before R^2 , the discal band of the hindwing is more white, and is broader in front of R^3 , while the discal lunules are less heavy.

3. *Charaxes hansali baringana* subsp. nov.

♂. Wings, *upperside*, basal areas deeper olive; discal band much narrower, the postdiscal spots situated in costal area consequently farther away from the upper spots of the band than in *h. hansali*.

On the *underside* the olive bars on the forewing broader than in Abyssinian specimens, especially those situated at the proximal side of the white band; the olive submarginal area of the hindwing more extended, and therefore the tawny spots smaller, being reduced to acute triangles which stand separate from one another.

Hab. Lake Baringo (F. R. Roberts) ; 1 ♂, in bad condition.

This insect is a very interesting find, *hansali* being hitherto known only from Abyssinia and Northern Somaliland.

SPHINGIDAE.

4. *Macroglossum micacea albibase* spec. nov.

♂♀. Body and forewing deeper olivaceous black on upperside than in *m. micacea*; abdomen without side-patches; base of seventh abdominal tergite much more extended white, tips of lateral tufts of abdomen white as in *m. micacea*; sternite 7, or also 6, with more white scaling.

Hindwing, *above*, without trace of the yellowish buff patch and streak situated in *m. micacea* between cell and abdominal margin. On *underside* the base and the abdominal area are white, the latter being less extended than in *m. micacea*, with just a trace of buff colour distally.

Hab. Bougainville I., Solomon Is., April and May 1904 (A. S. Meek).

A series.

ARCTIIDAE.

5. *Clerckia miles cybdela* subsp. nov.

♂. Band of forewing, above and below, as wide as in *miles miles*; band of hindwing usually reduced to a narrow costal streak, very seldom extended across the wing to (SM¹) as in *miles miles*, with intergradations.

♀. Like *miles miles*, but black distal border of hindwing rather narrower; in one specimen, however, the orange band of the hindwing much reduced in width.

Hab. Bougainville I., Solomon Is., April and May 1904 (A. S. Meek).

A long series. This insect connects *miles isabella* with *miles miles*.

6. *Caprimima caeruleascens bougainvillei* subsp. nov.

♂♀. Yellow band of forewing rather broader than the metallic basal area, not narrowed costad or very little, its outer edge straight or feebly incurved in the cell; black distal border as broad at apex as in *caer. caeruleascens*; yellow area of hindwing triangular, at least half as wide again as black basi-abdominal border.

Forecoxa of ♂ purple, as in *caer. caeruleascens*, first foretarsal segment with a few white scales near apex.

Hab. Bougainville I., Solomon Is., April and May 1904 (A. S. Meek).

A series.

The insects described in *Nor. Zool.* as *C. caeruleascens isabella* (1901) and *C. caeruleascens mononis* (1904) are most probably forms of a species distinct from *caeruleascens*.

ON THE BIRDS OF THE AZORES.

By ERNST HARTERT, Ph.D., AND W. R. OGILVIE-GRANT.

(Plate III.)

THIS is believed to be a complete list of all birds hitherto known to occur in the Azores either regularly or as occasional visitors. The account of the expedition, field notes, and notes on nests and eggs, as well as the list of the birds in the Ponta Delgada Museum, are written by Mr. Ogilvie-Grant.

For the identification of the specimens in the Ponta Delgada Museum Mr. Ogilvie-Grant is alone responsible, except in cases where a specimen has been presented by that museum to the British Museum. In these cases Dr. Hartert has also seen these specimens and has identified them, and in no case was there any difference of opinion. The nomenclature of the species and the lists of specimens collected, descriptions of new forms and systematic discussions are by Dr. Hartert. To make it quite obvious who wrote each part of the article, everything written by Mr. Ogilvie-Grant is enclosed in square brackets.

The ornithology of the Azores is poor in species and entirely palaearctic.

We must accept as certain the occurrence of about 120 species, while three or four others, mentioned by former writers, must be considered as more or less doubtful (see under Nos. 25, 44, 60, 66, 85, 94). Of these, 26 or 27 breed regularly, and apparently have not been introduced by man. Some forms are perfectly the same as those found in Europe generally, as for example *Scolopax rusticola*, *Erithacus rubecula*, *Sylvia atricapilla*. Others are very slightly differentiated from their European representatives,—as for example, *Columba palumbus azorica*, *Sturnus vulgaris granti*, *Regulus regulus azoricus*, *Turdus merula azorensis*. One, the grey Bullfinch, is remarkably distinct, and mostly considered as a good species. A few only are the same as, or closely allied to, the Madeiran and Canarian forms: *Serinus serinus canaria*, *Fringilla coelebs moreletti*, *Buteo buteo insularum*, *Motacilla boarula schmitzi*; but none of the more remarkable species peculiar to the Madeiran and Canarian groups inhabit the Azores. The list of occasional visitors is large, and specially rich in American species, but many European birds touch these islands on their migrations to or from Africa, when deviating westwards from their route.

The literature dealing with the birds of the Azores is not large. The following articles are all we are aware of:

Pucheran: "Observations sur deux espèces de Passereaux originaires des Açores." In *Rev. et Mag. Zool.* 1859. pp. 409-14.

Morelet: *Notice sur l'Histoire Naturelle des Açores.* Paris, 1860.

Enumeration of thirty species.

Dronet: *Éléments de la Faune Açorienne.* Paris, 1861.

This generally very useful book contains a list of forty-six species, but at least one or two are erroneously identified—for example, the Wood-pigeon is called *Columba trocaz*!

Bocage: "Ornithologia dos Açores." In *J. Sci. Math., Phys. e Nat. Lisboa* i. pp. 89—92 (1868).

Godman: *Natural History of the Azores*. London, 1870.

Fifty-three species of birds are enumerated in this excellent little memoir.

Simroth: "Zur Kenntniss der Azorenfauna." In *Archiv für Naturgeschichte* 1888. i. pp. 179—234.

Ninety-two species of birds enumerated. There are, unfortunately, a few striking errors in this list—as, for example, with regard to the Woodpeckers, which were procured in Portugal and thus labelled in the Ponta Delgada Museum.

The situation of the Azores can be seen in every atlas. A useful little map is to be found in Mr. Godman's book, and large maps of most of the islands are given in Barroi's "Recherches sur la Faune des eaux douces des Açores," in *Mém. Soc. Sciences de Lille*, cinqui. série, fasc. vi. 1896. An interesting, though not zoological, work is Hartung's *Die Azoren, in ihrer äusseren Erscheinung und nach ihrer geognostischen Natur geschildert*.

(Collections of insects from various Atlantic islands made by Mr. Hartung are in the Königsberg Museum; but, as far as I am aware, they have never been studied.)

[ACCOUNT OF THE EXPEDITION TO THE AZORES.]

As the Ornithology of the Azores had not been investigated since the days when Mr. F. D. Godman examined part of the group in 1865, it seemed possible that something of interest might still remain to be discovered, which would justify another visit to the islands.

Mr. Walter Rothschild having generously offered to defray all expenses, the Trustees of the British Museum granted me three months' special leave of absence, on the understanding that half the collections made should be the property of the Natural History Museum.

Leaving England on Saturday, February 14th, by the s.s. Briton of the Union Castle Line, we landed the following Wednesday at Madeira. There we awaited the arrival of the Portuguese mail-boat, which calls at Funchal on the 23rd of each month *en route* for the Azores. I was accompanied by my brother-in-law, Mr. G. A. St. Quintin, an enthusiastic naturalist, and by Mr. L. C. Harwood, who was engaged to join the expedition as taxidermist. To my regret, urgent business compelled Mr. St. Quintin to return to England at the end of the first month, and I was thus deprived of his valuable assistance. It was our intention to visit, if possible, all nine islands of the Azores, and, as the time at our disposal was limited, only a certain number of days could be devoted to each. I had therefore before leaving England drawn up a plan of campaign, which, thanks to the kindly assistance of the Portuguese authorities at the Azores, was carried out almost exactly as it had been originally arranged. Our baggage, consisting of forty-two pieces, was transhipped exactly twenty-four times before it was again landed in England; and though we encountered some rough weather, and had some difficult landings, the natives managed their boats with such skill that we lost nothing and sustained little or no damage from sea-water.

The weather at Madeira was so wet and rough that it was found impossible to land at Calheta and visit the high ground at the west end of the island,

where we had hoped to procure examples of the Long-toed Pigeon (*Columba trocaz*), and only a small collection of some of the more interesting local birds was made. During the days spent at Funchal we made our final arrangements, and engaged the services of one José Andrade as cook and interpreter.

On February 24th the s.s. Funchal, a Sunderland-built boat of 1100 tons, left Madeira, and, after two somewhat unpleasant days across a heavy sea, reached Santa Maria, the most southerly island of the group. The strong south-west wind which had accompanied us had blown up a heavy swell, and an ugly surf was breaking on the rocks; but, thanks to the able way in which the boats were handled, we managed to land all our baggage without damage or loss. Suitable camping-ground was very difficult to find, all the country being very wet, and we finally pitched our tents close to the small village of Almagreira, near the middle of the island. After two days of heavy rain, accompanied by a strong south-west wind, the ground became so saturated that we were obliged to give up the idea of living in tents, and gladly accepted the loan of an empty country house at San Pedro, in an excellent central position. For this act of courtesy and kindness we were indebted to Senhor Albino Augusto Pereira, the Administrator of the island. The advantage of having a good roof over one's head in such a climate was at once apparent, and under these improved circumstances twice as much work was daily got through as had at first been accomplished.

We remained at Santa Maria for a week, and during that time traversed the greater part of the island, and worked some really good-looking ground. The lower parts of the island are mostly cultivated, the fields being surrounded by the usual walls of loose volcanic stones and lava, characteristic of all the islands, which make a cross-country journey over the low ground a slow and tedious process. The high ground, rising to an altitude of nearly 2000 feet, is steep, in many places very picturesque, and for the most part thickly clad with heath bushes, juniper, faya and other evergreen shrubs, intermingled on the lower slopes with small woods and clumps of pine, and here and there a few gum-trees.

The undergrowth consists chiefly of bracken, bilberry, and bramble, the last-named often attaining a great size, and, when not quite impenetrable, presenting a formidable barrier to one's progress. Birds were numerous, but the species represented were disappointingly few; with land-shells we were more successful; and a fair collection of moths, chiefly *Geometridae*, was got together. The only butterflies seen were faded and worn examples of the Painted Lady (*Pyrameis cardui*) and the Red Admiral (*Vanessa atalanta*).

There are some curious fossil-beds found in different parts of the island, some miles inland, and from these we brought home various examples of the Mollusca and Echinodermata, which are said to belong to the Miocene period, and appear to be of considerable geological interest. It is noteworthy that the same species occur in the beds on the Lime Island of the Porto Santo group, to the north of Madeira.

On March 4th we left Santa Maria on a small tug specially chartered to take us to San Miguel, fifty-three miles distant, and landed at Ponta Delgada at seven o'clock the same evening.

Thanks to the letter of recommendation sent by the Foreign Office to the authorities at Lisbon, the King of Portugal had personally interested himself

in our expedition, and commanded the civil governors of the islands and those in authority to afford us every facility in carrying out our work, and we were consequently treated with the greatest consideration and courtesy by all with whom we came in contact. I may here add that the whole of our baggage and stores were passed through the Customs free of cost.

We were obliged to remain at Ponta Delgada until the 7th, as Major F. A. Chaves, the head of the Meteorological Service, to whom we had been specially recommended, was absent for a few days at Fayal, and it was all-important that before starting we should discuss our future plans with him. On his return he received us in the kindest manner, and gave us a large amount of practical help and valuable information respecting the various islands, for which we were most grateful. In the course of his work he has visited all the islands of the Azores many times, and travelled over the more remote and unfrequented parts; consequently his topographical knowledge of the group is unrivalled, and he was able



Ponta Delgada, San Miguel, on a stormy evening.

to point out to us the localities on each island which he considered would yield the best results. At Ponta Delgada we found a very good local museum, containing a fairly complete collection of zoological specimens, which has been entirely got together by the energy of Major Chaves, who is deeply interested in all branches of science and proficient in many. I went carefully through all the birds in the Ponta Delgada Museum, and named those which in some few cases had been incorrectly identified. The total number of Azorean birds amounts to about 120 species, of which 26 or 27 may be regarded as residents, while a few are doubtful, and the remainder are occasional or accidental visitors.

I decided to make three camps on St. Michael's, and moved first to Lameiro, a country house near Ribeira Grande, on the north coast. This house, the property of Marquis Jacome de Correia, was kindly placed at our disposal, and there we remained for six days, working the woods and higher grounds towards Lake Fogo. On March 13th we moved by the north road to Mr. George Hayes' house above Furnas Lake, and worked all the surrounding country within reach, especially the range to the north-east of Furnas, whence we obtained twelve examples of the extremely local and almost extinct Bullfinch (*Pyrrhula murina*,

Godman). We did not come across the Lesser Spotted Woodpecker (*Dendrocopos minor*), which is reported to have occurred at one time in this district. The only example of this species in the Ponta Delgada Museum is a bird from Portugal; and though Major Chaves, who takes a keen interest in the matter, has offered rewards and himself been on the look-out for this species for years, no example has ever been forthcoming. I may add that Major Chaves regards the story of its occurrence as a myth; but Senhor Jeronymo, the hotel-keeper at Furnas, assured me that, as a boy, he had more than once seen the bird, and remembered it well.

The remarkable boiling springs at Furnas have often been described, and are too well known to require any remark. Our work was much interfered with by the heavy rain, which was of almost daily occurrence, and made the densely wooded ridges very unpleasant walking. The ground above Furnas Lake yielded a fair number of Geometers, which were mostly taken at night with a lantern. On the 19th, in pouring rain, we got all our baggage carried down to the edge of the lake and taken across in a boat, the road at this season being partly under water. Mule-carts had been engaged to meet us on the other side, but the owners being very unwilling to move in the heavy rain, they did not turn up, and we had some difficulty in arranging transport to Ponta Delgada. We returned by the south road and, passing through Villa Franca, arrived at Ponta Delgada late the same evening. On the 21st we moved to the Sete Cidades, the magnificent crater at the west end of San Miguel. Our ascent to the lip of the Caldeira was unfortunately made in dense mist, so dense that we could see nothing till we descended to the small inn within the crater, which had been hired for us. During the five days spent in these splendid surroundings we encountered some very heavy rain-storms, and only one day was perfectly fine and clear.

Here, for the first time, we found under stones a few examples of the remarkable Shell-Slug (*Plutonina atlantica*) peculiar to the Azores and not represented in the British Museum collection. Its only living ally is a species found in the Siwalik Hills of Northern India, but it has various fossil representatives. The only new bird added to the collection was the Snow-Bunting, which, according to local report, breeds on the high ground; but Major Chaves thinks this statement more than doubtful, as he has never been able to verify it, and in all our wanderings among the tops of the various islands we never came across this bird again. The 25th of March found us once more at Ponta Delgada, waiting for the steamer Funchal to take us to Terceira. We filled up the time by getting a nice series of the small Greenfinch and the Goldfinch, both of which frequent the gardens in the neighbourhood of the town. Besides naming the birds in the Ponta Delgada Museum, I made a list with notes of all the specimens from the islands, and, with Major Chaves' help, selected a set of duplicate Azorean birds, which were presented to the British Museum. He wrote many letters on our behalf to his friends on the different islands, requesting them to secure suitable houses for us in the localities to be visited. In this way everything was arranged in advance, and much valuable time saved. The Portuguese people on the Azores are most hospitable, and in only one or two instances were we allowed to pay rent for the houses we occupied.

One of the difficulties in our future movements was the question how we were to return from Corvo and Flores, which are the most westerly islands of the group, and situated 150 miles west of Fayal. The Portuguese mail-boat

Açor touches at Flores every month, and at Corvo every third month; but as we could not possibly devote a month to these islands, and wished to limit our visit to eight days, it seemed probable that we should have to hire a tug—a very serious consideration.

In this dilemma Major Chaves once more came to our assistance, and suggested that, as the King had issued commands that we were to be helped in every way, he should telegraph to the Civil Governor at Horta and ask for the loan of the gunboat Açor. To our great satisfaction a telegram informed us that the boat had been placed at our disposal, and that it was only necessary to state on what day she was required to be at Flores. Early on March 28th we anchored off Angra, the capital of Terceira, and after breakfast got our baggage on shore and called on Senhor José de Sequeira, to whom we had letters of introduction from Major Chaves and from Bensaude & Co. He proved most kind and businesslike, for he had not only secured for us the loan of the Quinta de Nasce Agua, with its capital house on the best part of the island, but had made all arrangements for transport, so that we were able to settle down in our new quarters and get to work without delay. During fourteen days spent on Terceira, we traversed the greater part of the island and collected on very varied ground, paying special attention to the pine woods in the hope of coming across the Little Woodpecker, said to have occurred there also. We, however, found no trace of it. Up till now we had not been able to secure a single Buzzard, for though we had seen plenty, they were so wild and wary that no chance of shooting one had occurred. Unfortunately I was without my small-bore (.250) rifle, which would have greatly simplified matters. At Terceira, however, we were able to alter this state of affairs, and in ten days secured seven very fine birds, and before the end of the trip increased the number to twenty-three. The Wood-Pigeon, another desideratum, occurred in scattered pairs, and we managed to secure eight, apparently the only ones in our neighbourhood. The bird appears to be smaller and darker than the Common Wood-Pigeon, and the flesh has a delicious flavour, probably due to the oxalis bulbs, on which it chiefly feeds. While here we were fortunate enough to trap a large Weasel, which appears to be of special interest, and most nearly allied to the species found on the island of San Thomé. According to the natives it is a rare animal, and substantial rewards subsequently offered failed to produce further examples. (Two more examples have since been forwarded from Terceira by Mr. Chassereau.) Insects were becoming more plentiful, and the flowers of the faya-trees, then in full bloom, yielded a number of Noctuae, etc.; but sugar proved a complete failure, though we persevered night after night. Shells were numerous and varied, and in this branch our collection was rapidly augmented. It was with great regret that we left our charming house at Reguinho on the evening of April 10th and went on board the mail-boat Açor, *en route* for Corvo and Flores, for though the weather had often been wet and misty, we had altogether spent a very enjoyable and profitable time. Food was cheaper at Terceira than it had been at San Miguel, and local gunners were always glad to supply quails at 2*d.* each, woodcock at 4½*d.*, and rabbits at 6*d.*

The Açor first visited Graciosa, where we landed for a couple of hours and made arrangements with Mr. Filipe Andrade for our subsequent visit to that island. We then proceeded to call at Calheta, San Jorge, but after remaining there for some hours, during which it was only possible to land the mails, it came

on to blow so hard that we were glad to weigh anchor and take shelter under Pico, where we remained till morning.

A few hours later we steamed into the harbour at Horta, the capital of Fayal. There we called on the Civil Governor, and on Captain Lima, of the gunboat *Acor*, as well as on others to whom we had brought letters of introduction, and in every instance met with great kindness and offers of assistance; Mr. Millier-Wood, the head of the English telegraph station, was specially kind and helpful. We arranged that the gunboat should, weather permitting, call for us at Flores on April 20th and convey us to Graciosa.

In dull, misty weather, but fortunately comparatively calm, we arrived off Corvo at 6 a.m. on April 14th. The landing-place is so beset with dangerous rocks sticking up in every direction that, in anything like rough weather, landing is quite impracticable. The captain having kindly promised to wait for us till 11 o'clock, we were soon on shore, and, working our way up the island, made for the *Caldeira*. The weather was so thick and our time so limited that we only succeeded in climbing about half way up to the summit. Apart from the cultivated fields and a few stunted fig-trees and reeds, there was no vegetation except grass, but the crater and the lake within are said to be very fine, and we would gladly have spent a couple of days on this interesting volcano, had not the uncertainty of being able to return to Flores by boat deterred us.

A few hours later we arrived off Santa Cruz, Flores; but owing to the state of the wind and tide, we were obliged to anchor a mile from the landing-place. Mr. Mackay, the British Consul, came on board to welcome us, and introduced us to Mr. Mendonça, to whom we had letters of introduction. We took up our quarters in a little house in the town, the only one available. It was inconveniently situated for collecting, as we had to start every morning from sea-level for our collecting ground, and the nearest trees suitable for sugaring were some distance off. After two attempts to reach the high ground, which were frustrated by heavy rain and thick mist, we were favoured by a fine day, and able to visit the four *Caldeiras* and the large marsh in the middle of the island. We found a few Wild Duck, Snipe, Gulls, and Terns breeding, and saw the usual Passerine birds, such as Canary, Chaffinch, Blackcap, Blackbird, and Goldcrest, but nothing new or of especial interest. The Buzzard only occurs as an occasional straggler on Flores and Corvo, and we met with none. As we were descending across the high open ground a drenching rainstorm overtook us, and we returned, as usual, wet to the skin. The rainfall in Flores must be very heavy indeed, and during the remaining days spent on the island our work was greatly hindered by an almost continuous downpour, accompanied by a high north-west wind. This blew up a big sea, and the huge breakers crashing heavily on the rocky coast at Santa Cruz were a truly magnificent sight.

The island of Flores is very lovely, and with its wild, picturesque coast scenery and splendid seas, should prove a most attractive spot to any artist who paints such subjects.

On the 20th, contrary to expectation, the little gunboat turned up at Santa Cruz. It appeared that she left Fayal in fine weather, but when about half way to Flores ran into a heavy storm, and only made the harbour after twenty-seven hours' steaming against wind and sea with an average of barely four knots an hour. Captain Lima and his officers were kindness itself, the former giving up his cabin to us. As the weather had now moderated, we quickly finished our packing, and

got all our baggage on board without mishap. About 11 o'clock next morning we anchored off Santa Cruz, Graciosa, the most northerly island of the group, about 180 miles east of Flores. Mr. Filippe Andrade met us at the landing-place, and conducted us to a little house which he had hired for us on the outskirts of the town. He had hoped to get the loan of the Quinta Boa Vista, in a wooded valley above Praya, but unfortunately the owner was absent, and his consent could not be obtained in time. The greater part of Graciosa is but poor collecting ground, being mostly under cultivation, and the only part with any extent of wood is the valley above Praya. Quails and Buzzards were particularly numerous, and on no other island did we see so many. Far the most beautiful spot in Graciosa is the Caldeira, one of the most perfect in the Azores. To the south of the lake, which lies within its cup-shaped crater, there is a deep narrow rift through the upper crust, known as the Furna do Euxôfre (Cave of the Sulphur), by which one can descend into the bowels of the earth and explore an extensive underground lake stretching nearly to the outer wall of the crater. Being anxious to visit this curious spot, we engaged a stalwart man to meet us with the requisite rope and lower us into the abyss. The rocky sides of the chasm are smooth and almost perpendicular, but the distance to the floor of this arched cave is not very great—probably less than a hundred feet. Near the edge of the lake there is a boiling spring; but though the place is very curious to behold, we found no animal life of special interest, and apparently the lake does not contain any vertebrate fauna. The only living animals of this dismal place were Rock-Pigeons; on the ground we saw several skeletons of goats and sheep, which must have accidentally fallen in and been killed.

While at Graciosa I had the singular good fortune to kill two rights and lefts at "Milhafres" (Buzzards) in a couple of minutes. One evening on returning home I heard that an Owl had been seen the night before in an old disused Quinta surrounded by large trees. Mr. Andrade's son having procured the key of the garden, we at once set off, and after a weary tramp of three miles along a lava-strewn track, arrived at our destination just as it was beginning to grow dusk. We had scarcely entered the garden when eight buzzards got on the wing, and before they had time to escape half their number were collected. No doubt our informant had mistaken a Buzzard for a large Owl. We were, however, well satisfied with our evening's work, as "Milhafres" were always difficult to shoot, and such a unique chance was never likely to occur again. The Goldcrest, curiously enough, does not occur on Graciosa.

On April 28th we made an early start for Praya, where we expected the Funchal to pick us up about 9 a.m. It had been blowing hard in the night, and though there was a big sea running, with huge breakers, we hoped that, with the rising tide, it might moderate sufficiently to allow us to ship our baggage. Graciosa being nearly round in shape and devoid of any good harbours, there is no shelter in a high sea, and communication is difficult or impossible. The Funchal, after waiting for two hours and seeing that it was hopeless to land her mails, much less take up passengers, left for San Jorge. The distance to the latter island is not very great (about forty miles), but at this season no sailing-boat could be hired, their owners fearing the risk while the weather remained so unsettled. In this dilemma I telegraphed to Captain Lima, telling him we were marooned on Graciosa, and asking if he could come to our assistance, and had the satisfaction of hearing that he would start as soon as the weather moderated. Meanwhile we took up our quarters in a draughty old house situated among the vineyards above Praya, and waited.

For the next two days the weather was awful, blowing and raining incessantly, and with the exception of a Wood-Pigeon, nothing of note was added to the collection.

At 6 a.m. on May 1st the gunboat turned up, punctual almost to a minute, and an hour later we were on our way to St. Jorge, arriving at Calheta about noon the same day. After thanking Captain Lima for his kindness in coming to our rescue, we landed in the Custom house boat which had been sent for us.

Senhor Mannel Augusto da Cunha, the Bensaude agent, had gone to Vellas to meet the Funchal on her return journey, but we were met by his representative and an interpreter, Mr. G. M. Rose. Everything had been arranged for our comfort; an excellent little stone house, situated on the best collecting ground, at an elevation of about 2000 ft., had been secured, and baggage animals were in waiting.

While we were enjoying a sumptuous lunch at his house at Calheta, Senhor da



The collectors' cottage on the top of San Jorge. Many Woodcock might be shot of an evening from the front door.

Cunha returned from Vellas, and after a hearty welcome, to our great delight handed us our missing mail. The island of San Jorge is about 36 miles long, very narrow, and extremely steep, the sides rising almost perpendicularly from the sea, until one reaches an elevation of from 1000 to 2000 ft. The top is grassy and undulating, covered with clumps and woods of heath-trees and junipers, etc., and culminating along the backbone in a series of grass-covered craters, the highest of which attains an elevation of about 3500 ft. Numbers of fine cattle and sheep are raised on these charming upland parks, where the pasture is excellent and abundant, and a large amount of cheese is made and exported. No spot we had visited was so pleasant, and during the ten days we remained on this island the weather was almost continuously fine. After the terribly stony countries we had been accustomed to, the top of San Jorge, with its carpet of springy turf and moss, and its virgin woods of grand old heath- and juniper-trees, was a delightful change. We worked the island to the north coast, and westwards almost as far as Vellas, which is about eighteen miles from Calheta. Woodcock were very numerous, more so than

on any other island in the Azores, and many males might be seen fighting over our house every evening, as the nesting-season had commenced. We found a nest with four eggs, and among those killed for specimens shot a nearly complete albino. Wood-Pigeons were also fairly common in scattered pairs, and with some trouble I managed to shoot seven, and secured a nest with two eggs. We trapped or shot several fine Buzzards; a large male managed to break both the thick strings securing the traps, and went off with one on each foot; he was, however, unable to rise, and had only gone a hundred yards or so before we secured him and recovered our traps, the loss of which would have been serious.

For the first time, sugaring for moths proved really successful, and on some



Pico, from the camp at the west end of the island.

evenings as many as forty were taken; also many *Geometridae* were captured by day under stones, or with the aid of a lantern at night.

Shells were numerous, and we again came across examples of the remarkable Shell-Slug (*Platonia atlantica*) previously mentioned as occurring on San Miguel.

Throughout our stay Senhor da Cunha treated us with more than ordinary kindness, and kept the house supplied with beef, chickens, butter, eggs, milk, bread and vegetables, for which he absolutely refused to accept any payment. His unbounded hospitality was somewhat embarrassing, as we had no means at our disposal of making any adequate return.

On May 11th we left San Jorge with many regrets, and proceeded on the s.s. Açor, *via* Pico, to Fayal, which was reached at 2 p.m. At Horta we found the large sailing-boat we had ordered waiting in the harbour, and having transferred

all our baggage on board, sailed for Magdalena, on the opposite coast of Pico. The wind was contrary, the sea in the channel rough and choppy, and it was only after several weary hours that we managed to traverse the four intervening miles and land on Pico at 6.30 p.m. It was then too late to start for our camp, and we remained in an empty house on the coast for the night. Early next morning such things as were required were moved to a large old Quinta, surrounded by high walls, near the village of Sete Cidades, and about four miles from the coast. The Quinta contained a small stone hut in rather dilapidated condition, but, with the three tents, we soon managed to make a comfortable camp.

We had now arrived at what we fondly hoped would prove our best collecting ground. The volcano of Pico, nearly 8000 ft. high, towered to the east of our camp, and its thickly wooded lower slopes, clad with dense bush and scattered clumps of pine, stretched for about six miles above us, and seemed to promise something new.

The wood, however, ceases at about 2500 ft., and gives place to open grass-country, with clumps of heath-trees and bilberry. Higher up, at about 4000 ft., only grass-slopes are met with: and, above this, desolation and lava, covered with grey lichen and moss, hold undisputed sway to the top. Major Chaves, who knows the island well, had warned us to expect nothing different in the way of birds, and his prediction proved only too correct. We spent a week of very arduous work on the west side of the great volcano, and got over most of the wooded country in the course of our rambles, but the covert was so dense that small birds were only to be found near the edges of the bush.

The walking was simply odious; and the ground being everywhere covered with loose lava, masked with moss and herbage, played havoc with strong shooting-boots. Finding nothing fresh on this ground, we moved round the base of the mountain to the southern side, a distance of about seventeen miles, and ascended by the Ribeira Sêcca. This ravine proved extraordinarily steep and difficult to traverse, birds were scarce and wild, and we met with no novelties.

Returning to Sete Cidades, we moved to another camp at San Roque, on the north side, at a distance of nineteen miles, and worked all the ground up the northern and eastern base of the cone. Here the country is comparatively free from lava, and the walking very much better; but though we were indefatigable in our search, no new, or even different, birds were forthcoming. With shells and moths, etc., we were more successful. During our stay on Pico, with the exception of a few miserable days, when we encountered high winds and heavy, almost incessant rain, the weather was fairly good. The climate is much drier than on the other islands, and one of the great difficulties in camping is the lack of water, the supply being almost entirely derived from rain-water tanks.

On May 23rd we returned to Magdalena, and crossed by boat to Fayal. After a quick run of an hour we reached Horta at 6 p.m. in pouring rain, and remained there for the night. An early start was made for the little house which Mr. Ferreira had kindly engaged for us on the western Lomba, a few miles above the town. The interior of Fayal is lovely, and the ground in many places looks admirable for collecting; but the very wet climate and damp heat are considerable drawbacks, and during the greater part of our stay the high ground was covered by dense clouds and mist, and it frequently rained heavily. Two attempts to reach the Caldeira were frustrated owing to heavy

rain, but on the third occasion we were more fortunate, and when the mists cleared at intervals, obtained wonderful views of the crater and the lake within it. Our time being so limited, we were only able to traverse the best of the ground, and no different birds were added to the collection. The entire absence of butterflies, with the exception of a few common species, was very disappointing. No doubt, had we been able to spend June, July, and part of August in the Azores, some interesting insects would have been captured, but the season in these backward islands is at least a month behind that of the south of England. I showed one or two Portuguese gentlemen how to collect butterflies and moths, and since my return to England have supplied them with the necessary collecting gear.



A wood of *Cryptomeria japonica* at Sete Cidades, San Miguel.

In this way it is hoped we may eventually receive valuable species, which we were unable to obtain.

The 29th of May saw all our collections packed, and after settling up our affairs, and calling on the Civil Governor and other kind friends, we went on board the Funchal, *en route* for Madeira.

As the steamer waited at Terceira for a whole day, we hired a boat, and were rowed out to the Goat Islets, about four miles from Angra. It had been too rough during our previous visit to land there, but the sea was now fairly calm, and we scrambled ashore without much difficulty. Several of the Mediterranean Shearwaters were already nesting, and we secured eggs; but the only other sea-birds breeding were the Lesser Black-backed Gull and the Common Tern. At Santa Maria we paid a similar flying visit to the little island of Villa,

and found numbers of Shearwaters sitting in holes in the rocks, each on its single egg. Starlings and Canaries were nesting on the ground, the former under loose stones, beneath which we also found several interesting land-shells, different from those found on the mainland of Santa Maria.

Madeira was reached on June 4th, and, after a few days spent at the Rabçal (4000 ft.) in bitter cold, dense mist, and pouring rain, we returned to Funchal, and caught the Carisbroke Castle, arriving in London on June 13th.]

LIST OF THE BIRDS OF THE AZORES.

1. *Caccabis rufus* (L.)

Tetrao rufus Linnaeus, *Syst. Nat.* Ed. x. p. 160 (1758—ex Gesner, Aldrov., Johnston, Will., Raj., Albin. "Habitat in Europa australiori." Linnaeus must have made a mistake when he mentioned this bird in his *Fauna Suecica*, No. 171.)

♂ ad., San Pedro, Sta. Maria, 400 ft., 3. iii. 1903. "Iris and naked skin round eye red, bill red, legs coral-red."

♂ ♀ ad., near Magdalena, Pico, 200 ft., 18. v. 1903. "Iris reddish brown."

These three examples are very dark and bright, thus resembling the Spanish, and especially the Madeiran race, more than the birds from France and Italy.

[Local name : Perdiz.

Specimens in the Ponta Delgada Museum :

a, b. Ginetes, Western San Miguel.

The Red-legged Partridge was introduced by the early settlers into some of the islands of the Azores, and is still found in some numbers on Santa Maria, where we came across a few pairs on the small bean-fields and rough grass country, interspersed with broom and dwarf bilberry, near the coast. It still lingers on San Miguel, but is now very rare ; on Terceira it is confined to Mount Brazil, close to the town of Angra, where it is carefully protected. On western Pico it is fairly numerous about the fields and vineyards near the coast. So far as we could ascertain it does not exist on any other island of the group. The female of the pair killed on Pico on May 18th contained large eggs, and was evidently nesting.

The birds are evidently descended from Iberian ancestors, as may be seen by the bright colouring of the plumage.]

2. *Coturnix coturnix africana* Temm. & Schleg.

Coturnix vulgaris africana Temminck & Schlegel. *Fauna Japonica*, Ives, p. 103 (1850—South Africa).

8 ♂ ♂ ad., 2 ♀ ♀., Reguinho, Terceira, 1200 ft., 4, 7. iv. 1903.

1 ♀ ad., Paül, Terceira, 30. iii. 1903.

7 ♂ ♂ ad., 2 ♀ ♀ ad., Sta. Cruz, Graciosa, 22, 23. iv. 1903.

1 ♂ ad., above Caes do Pico, 1000 ft. high, May 21st, 1903.

1 ♂ ad., above Horto, Fayal, 1000 ft. high, 27. v. 1903.

All these Quails are very richly coloured, and have rufous throats, though varying very much inter se. They seem to be similar to South African birds (the typical *africana*), but a comparison of a larger series might possibly enable us to separate them.

A white variety, with the dark markings of the regularly coloured bird of a

delicate grey, and a melanistic aberration, both from San Miguel, were presented by the Ponta Delgada Museum.

[Local name: Cordoniz.

Specimens in the Ponta Delgada Museum :

a, b. adult, Ponta Delgada, San Miguel.

c. albino, Furnas " "

d. albino, Ribeira Grande " "

e. dark variety, Lagõa " "

The dark varieties are very curious, and have somewhat the appearance and colouring of diminutive Red Grouse.

This resident red-throated form of the Quail was met with in varying numbers on all the eastern and central islands of the group, being particularly plentiful in Graciosa, where, had we wished to do so, large bags might have been made. On Flores and Corvo we never came across the bird, though we were informed that it does occur on the former island. On the wing it is strikingly smaller than the common Quail, and though the weight of the two birds was never actually compared, the difference must be considerable. Except on San Miguel, and to some extent on Santa Maria, the close season is not observed, and on the other islands, Terceira especially, the local gunners shoot Quail at all seasons in the most open manner and sell them for 50 reis, or about 2*d.* each. The call-note is indistinguishable from that of the common Quail.]

3. *Coturnix coturnix coturnix* (L.)

2 ♂♀. San Pedro, Sta. Maria, 1, 3. iii. 1903. "Iris hazel, legs yellowish-white, bill bluish-horn."

[Early in March a few typical examples of the common migratory Quail were met with on Santa Maria on the cultivated fields lying between San Pedro and the sea. On the wing they were easily distinguished from the resident red-throated form by their larger size. As we did not meet with the species on any of the other islands subsequently visited, though we shot numbers of Quail, it seems probable that the birds we found on Santa Maria were accidental visitors to the group. No doubt from time to time small lots of the migratory bird visit the Azores on passage, and remaining on the island, interbreed with the resident form; for some of the male specimens we procured on Terceira and Graciosa appeared to be intermediate in plumage, having the throat chestnut, largely mixed with whitish feathers, while the breast and upper mantle were paler than in *C. africana* and more like those of the common Quail.]

4. *Columba palumbus azorica* subsp. nov.

The Ring-Dove of the Azores differs from the typical North European *palumbus* in the deeper and more vinous colour of the chest and the darker slate-grey rump and head; also the longer upper tail-coverts are more brownish, and the under tail- and wing-coverts are generally a shade darker and duller. While these differences are very conspicuous in the males, they are less distinct in some of the females. The wing is on an average $\frac{1}{2}$ to 1 cm. shorter. Type ♂ ad. no. 330, Reguinho, Terceira, 1200 ft., 7. iv. 1903.

Mr. Grant sent specimens from San Miguel, Terceira, East Graciosa, San Jorge, and Pico.

He has marked the iris as pale yellowish-grey (straw-yellow, pale straw), bill yellow at tip, red at base, nostrils mealy, feet coral-pink.

A specimen from Relva, San Miguel, received by the British Museum as a present from the Ponta Delgada Museum, seems not only to belong to typical *palumbus*, but has the back exceptionally pale.

[Local name : Pombo troquaz or Pombo torcaz.

The Ponta Delgada Museum contains :

a. adult, Furnas, San Miguel.

This Wood-Pigeon is found on the eastern and central groups of islands, but does not occur on Flores and Corvo. Though nowhere really numerous, it is most common on St. Jorge and Pico, but on Santa Maria, San Miguel, Graciosa, Terceira, and Fayal it is only met with in small numbers, and is generally a difficult bird to procure. On Terceira we found a party of eight inhabiting the small pine woods in our neighbourhood, and after some trouble we succeeded in shooting a couple of specimens. Having mounted one of these as a "decoy," and placed it in a conspicuous position in one of the fields, we soon collected the remaining birds of the flock. This is by far the best way of securing Wood-Pigeons as specimens, for when shot cleanly on the ground they lose very few feathers. We found that the birds were feeding largely on the bulbous roots of the yellow oxalis, and we considered their flesh superior to that of any other bird met with in the Azores.

The habits of the Azores Wood-Pigeon differ somewhat from those of British birds. One seldom, if ever, sees the former flying high in the air, and when moving from place to place, or coming in to roost, they fly very low, just over the tops of the bushes. They are very shy and skulking, and on San Jorge and Pico especially were met with in the small woods and clumps of heath-trees and juniper, as well as in the dense patches of faya and pine. On Pico we found pairs in the wooded and bush-clad sides of the dry watercourses up to about 3000 ft.

We found a nest containing two eggs in a dense juniper bush overhanging a watercourse on the top of San Jorge. The eggs measure respectively : 1.7×1.15 and 1.67×1.16 in.]*

Drouet calls this bird *Columba trocaz*, and moreover includes *C. laurivora* as a synonym !!

5. *Columba livia* aberr.

The Rock-Pigeons from the Azores belong to the dark race also found common on Madeira. They have the upper surface deep slate-black, more or less spotted with pale grey, the rump white or grey, the abdomen lighter or darker, and vary very much. It is evident that they are descendants of domestic Pigeons, but it is not without interest to see that they are generally (like those from Madeira) of the same style of coloration. In the *Ornitholog. Monatsschr. Deutsch. Ver. z. Schutze d. Vogelw.* xxii. p. 144, I have shown that the name of the Stock-Dove is *Columba oenas* L. 1758, that of the wild Rock-Pigeon *C. livia* Gm. 1788, and that the name *domestica* L. refers solely to the Domestic Pigeons.

Mr. Grant sent examples from central Graciosa, Pico, San Jorge, and Corvo.

[Local name : Pomba da Rocha.

* [Dr. H. Simroth—*Arch. f. Naturg.*, i. p. 120 (1888)—quotes Drouet as his authority for the occurrence of the Common Turtle-Dove in the Azores. Major Chaves, however, assures us that this is a mistake. The tame Dove (*Turtur risorius*) is found in a domestic state, and is probably the bird alluded to.]

The Ponta Delgada Museum contains :

a. adult, Relva, San Miguel.

The Rock-Dove is found abundantly throughout the group, and inhabits the sea caves so common along the rugged coasts of these volcanic islands, as well as the inland caves and rocky clefts in the Caldeiras. Among the flocks constantly to be seen feeding on the cultivated lands, certain individuals may be found which display considerable variation in colouring, but the great majority are very dark in plumage, and only occasionally did we come across birds resembling the typical *C. livia*. The rocks near the landing-place on the island of Corvo are positively alive with these birds, and they were so tame that we had no difficulty in shooting some with the small collecting gun as they passed close overhead. At the Cabras, or Goat Islets, off the south of Terceira, they were also extraordinarily numerous, and we shot a number from the boat as we passed the mouths of the great caves in these curious "stacks."]

6. *Porzana parva* (Scop.).

(It is advisable to accept Vieillot's generic name instead of Leach's. Both Leach's and Vieillot's books appeared in 1816, but Leach's names are "nomina nuda," not being diagnosed, and only recognisable on account of the species mentioned in connection with them, while Vieillot's genera are properly described. Under *Ortygometra* Leach mentions *crex* and *maruetta*—the acceptance of that name must consequently be avoided, if possible.)

[The Ponta Delgada Museum contains :

a. ♂, Fajã de Cima, San Miguel.

b. ♀, Relva, San Miguel.

A female example of the Little Crane killed at Furnas was presented to the British Museum. According to Major Chaves it must be regarded as a rare visitor.]

7. [*Porzana intermedia* Herm.

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

Baillon's Crane is a rare visitor.]

8. [*Crex crex* (L.).

Local name : Codornizão.

The Ponta Delgada Museum contains :

a, b. Arrifes, near Ponta Delgada, San Miguel.

An adult killed at Rosto de Cão was presented to the British Museum. Though we did not meet with the Corn-Crake, the species is reported as common, and is said to breed.]

9. [*Fulica atra* L.

Local name : Galeirão.

The Coot is tolerably common in the lake of San Miguel, and an adult specimen killed at Sete Cidades was presented to the British Museum.]

10. [**Gallinula chloropus** (L.)

Local name : Galeirão.

The Ponta Delgada Museum contains :

a. *b.* Ponta Delgada, San Miguel.

c. Sete Cidades, „ „

The Moorhen is tolerably common on the lakes of San Miguel. An adult killed at Sete Cidades was presented to the British Museum.]

11. [**Porphyrio alleni** Thompson.

Porphyrio caesus, Simroth, *Arch. f. Naturg.*, i. p. 192 (1888).

The Ponta Delgada Museum contains :

a. adult, Sete Cidades, San Miguel.

b. immature, Furnas, „ „

An immature specimen of Allen's Gallinule from Sete Cidades was presented to the British Museum. The species, according to Major Chaves, is not a very rare visitor.]

12. **Gavia imber** Gunn.

(*Colymbus glacialis* of those authors who do not seriously consider priority of names.)

[The Ponta Delgada Museum contains :

a. *b.* Ponta Delgada, San Miguel (in winter plumage).

c. Rosto de Cão, „ „ „ „

An adult in winter plumage killed at Rosto de Cão was presented to the British Museum. The species is not very rare in winter.]

13. **Colymbus nigricollis** (Brehm.)

[The Ponta Delgada Museum contains :

a. Rosto de Cão, San Miguel (summer plumage).

A moulting specimen of the Black-necked Grebe in nearly full summer plumage killed at Ponta Delgada was presented to the British Museum. This species is by no means common.]

14. **Colymbus auritus** L.

[*Podiceps rubricollis*, Simroth (nec Gmel.) *Arch. f. Naturg.* i. p. 195 (1888).

The Ponta Delgada Museum contains :

a. Rosto de Cão, San Miguel.

An Eared Grebe killed at Ponta Delgada in winter was presented to the British Museum. The bird is by no means a common visitor to the group.]

15. **Oceanodroma castro** (Harcourt).

Thalassidroma castro Harcourt, *Sketch of Madeira*, pp. 122, 166 (1851).

♂ ad., Praya Island, Graciosa, 25. iv. 1903. "Iris dark brown, bill and legs black."

[The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

We procured a single specimen of Harcourt's Stormy Petrel taken in a hole in the rocks on Praya Island on April 25th; on June 1st we picked up a dead specimen on Villa Islet, Santa Maria, but, at this season, the birds had not commenced to breed, and all their nesting-holes on that breeding-station were empty. The fishermen knew the bird well, and Senhor João S. G. da Camara kindly promised to procure specimens later on and forward them to England in spirits. This he did, the birds having been captured in September.]

16. *Oceanodroma leucorhoa* (Vieill.).

A specimen from Ponta Delgada, San Miguel, was presented by the Ponta Delgada Museum.

[There is a specimen of Leach's Petrel killed at Ponta Delgada in the Muséum at Angra, Terceira.]

17. [*Oceanites oceanicus* (Kuhl.).

The only record of the occurrence of Wilson's Petrel in the Azores is that given by Mr. F. D. Godman, who met with numbers of the species 35 miles west of Fayal, and procured some specimens, now in the British Museum.]

18. [*Bulweria bulweri* (Jard.).

Thalassidroma bulweri, Simroth, *Arch. f. Naturg.* i. p. 194 (1888).

Said by Drouet to be an accidental visitor to Flores and Corvo.]

19. *Puffinus kuhlii flavirostris* (Gould).

Procellaria kuhlii, Boie, *Isis*, 1835. p. 257 (Corsica).

Procellaria flavirostris, Gould, *Ann. & Mag. Nat. Hist.* xiii. (1844) p. 365 (near Cape of Good Hope).

Puffinus cinereus Simroth (nec Gmel.), *Arch. f. Naturg.* i. p. 194 (1888).

The form from the Atlantic Ocean differs from *P. kuhlii kuhlii* of the Mediterranean as follows: The bill is larger, generally thicker, higher, and longer; but males must be compared with males, females with females. The crown and sides of the head are generally darker, more slaty, being paler and more cinereous in *P. k. kuhlii*. The inner web of the outer primaries is uniform dark, showing no white whatever beyond the under wing-coverts, while in *P. kuhlii kuhlii* a large white mark or some white mottling extends beyond the under wing-coverts, sometimes to beyond the middle of the feathers. Very rarely this character is not developed. *P. kuhlii kuhlii* breeds in the Mediterranean, *P. k. flavirostris* on the islands of the Atlantic: Azores, Canaries, near Madeira, etc.

Mr. Grant collected the following specimens:

1 ♂, 2 ♀ ♀, Villa Island, Sta. Maria, 4. iii. 1903.

1 ♂, 1 ♀, rocks below Mt. Brazil, Terceira, 9. iv. 1903.

2 ♂ ♂, 2 ♀ ♀ ad., Praya Island, Graciosa, 26. iv. 1903.

"Iris brown. Bill yellowish-horn, nostrils, base and tip of rhamphothoea dusky. Legs pale flesh-colour, blackish on outer side of tarsus, outer toe, joints and webs."

[Local name : Cagarro.

The Ponta Delgada Museum contains :

a—c. Villa Island, Santa Maria.]

This Shearwater is very common throughout the seas of the Azores, and during our journeys between the different islands we steamed through large flocks either resting on the water, or skimming over the waves, in their characteristic manner. The greatest number were to be seen about the central group of islands, especially round Graciosa, San Jorge, Pico and Fayal. We saw none in the neighbourhood of Corvo, and though we sent men in the middle of April to several places on Flores where these Shearwaters were known to



Greater Isle of Cabras, Terceira. A breeding-place of *Puffinus kuhlii flavirostris*, and of immense numbers of Rock-Doves.

breed, we were unable to procure specimens. Towards the end of May, during our stay at San Roque, on the north coast of Pico, numbers of "Cagarros" had arrived at their breeding-places in the rocks below the village and flew over our house at night uttering their weird cry (*cf.* Grant, *Ibis* 1896. pp. 47-50).

When we visited Santa Maria early in March we procured a few specimens captured in the holes in the rocks on Villa Islet, but at that season only a small number were to be found in their breeding-haunts. On our return, however, to that island on June 1st we found a large colony had arrived, and nearly all the nesting-holes contained a bird sitting on its single white egg, which was either fresh or only slightly incubated. On the Cabras or Goat Islets, off the south of Terceira, which we visited on May 30th, about a dozen birds were found sitting, but many nesting-places were still empty, and the fishermen who accom-

panied us said that a little later the "Cagarros" swarm on these rocks. Another large breeding-station is on the small island of Praya, off Graciosa, but owing to the impossibility of landing in a heavy sea we were unable to visit the spot in person, though we subsequently secured a number of birds caught by some fishermen sent for the purpose. Most of these, however, were useless as specimens, for the men who caught them, after muzzling their beaks with string, had tied their wings together over their backs by means of the long quill-feathers, which were consequently broken to pieces; the birds were then slung on a long pole passed through their wings and carried up to our camp, and though subsequently set at liberty, were, I fear, quite unable to fly.

Measurements of the pure white eggs are : 2·7—3·1 × 1·5—1·95 inch.

20. [*Puffinus anglorum* (Temm.).

Local name : Cagarro.

The Ponta Delgada Museum contains :

a. ♀ ad. Santa Maria. April 1903.

According to Major Chaves the common Shearwater is a rare visitor to the Azores, and though constantly on the look-out for it among the hosts of *P. kuhlii flavirostris*, we never saw or procured a single specimen.

Mr. Godman appears to have found it fairly common throughout the group in 1865, and procured specimens at Flores in May. There are a male and female in the British Museum collection, and he says that the latter contained eggs in an advanced stage.]

21. *Puffinus obscurus bailloni* Bp.

Puffinus obscurus bailloni Bp., cf. Rothschild & Hartert, *Nor. Zool.* vi. p. 196. (The name *bailloni* has been adopted with reserve : possibly the North Atlantic form requires a new name.)

♂. Praya Island, Graciosa, 26. iv. 1903.

"Iris dark brown. Ridge of culmen and end of lower mandible blackish, latericorn, and rest of lower mandible slate. Legs slate-blue, outer aspect of tarsus and outer toe black, middle of webs and joints dusky."

Also from Rosto de Cão, San Miguel, in Ponta Delgada Museum.

[Local name : Cagarro.

The Ponta Delgada Museum contains :

a. ad. Pico Is.

Major Chaves informs us that the Little Shearwater is not uncommon ; and a specimen killed on San Miguel was presented to the British Museum.

The only bird we procured was taken by the fishermen sent to collect Cagarros at Praya Island, off Graciosa.]

22. [*Alca torda* L.

The Ponta Delgada Museum contains :

a. Rosto de Cão, San Miguel.

The above-mentioned specimen of the Razor-bill is the only known instance of its occurrence in the Azores.]

23. [**Alle alle** (L.)

The Ponta Delgada Museum contains :

a—c. From different parts of the shores of San Miguel.

An adult specimen of the Little Auk captured at Ponta Delgada was presented to the British Museum.

Major Chaves informs us that it occasionally visits the archipelago, and is then fairly common.]

24. [**Fratercula arctica** (L.)

The Ponta Delgada Museum contains :

a. ♀ imm., Ponta Delgada, San Miguel (in winter plumage).

The above is the only instance of the occurrence of this species.]

25. **Sterna fluviatilis** Naum.



Breeding-colony of *Sterna fluviatilis* on the rocks off Caes do Pico.

♀ ad., Caldeira, below Pico Cabaço, Flores, 2000 ft., 16. iv. 1903.

[The Ponta Delgada Museum contains :

a—c. Ponta Delgada, San Miguel.

The Common Tern, according to Major Chaves, is a common species in the Azores.

Numbers were seen on the rocks at the landing-place at Corvo, and it was common about the coasts at Flores, where a few pairs also frequented the lakes about the middle of the island. We found a large colony breeding on the rocks opposite San Antonio, a village on the north coast of Pico, and it was a lovely sight to see hundreds of these birds wheeling and circling round their nests, which were situated on the "stacks," only about thirty yards from the shore. Large numbers were breeding on the Cabras or Goat Islands off Terceira, and likewise on Villa Islet, off Santa Maria : but in the latter place all the eggs had been taken

and eaten by the fishermen from the neighbouring town of Porto, and hundreds of broken shells were all we found.]

(*Sterna dougalli* is said to have occurred by Godman and Simroth.)

26. [***Sterna cantiaea*** Gm.

We first saw the Sandwich Tern on the lake at Furnas, having been attracted by its unmistakable cry : subsequently a few pairs were seen at Seto Cidades. In both instances the birds were very wild, and we were unable to procure a specimen for identification. Being well acquainted with the bird, I have no doubt as to the correctness of this identification.]



Breeding-colony of *Sterna fluvialilis* on the rocks off Caes do Pico.

27. [***Sterna fuliginosa*** Gm.

Among the large colony of Common Terns found breeding on Villa Islet, Santa Maria, on June 1st, we saw a specimen of the Sooty Tern, and carefully identified the bird through our glasses. The fishermen informed us that they knew this bird well by sight, and that the same solitary individual had been there during the previous season. As we had landed on the island without a gun, we were unable to procure the bird.]

28. ***Larus argentatus cachinnans*** Pallas.

Larus cachinnans Pallas, *Zoogr. Rosso-Asiat.* ii. p. 318 (1811—Caspian and to Lake Balkal).

One adult example obtained near Ponta Delgada, San Miguel, from the Ponta Delgada Museum.

[Native name : Gaivotas, or Garças.

The Ponta Delgada Museum contains :

a—b. Ponta Delgada, San Miguel.

Large Gulls are common throughout the Azores, and we met with them on every island, and saw specimens in every intermediate stage of plumage during our journeys between the islands. Most of the lakes inside the Caldeiras were tenanted by one or more pairs of breeding Gulls, and on the islands of San Jorge and Fayal we met with them at an elevation of at least 3000 ft.]

29. *Larus fuscus*, pale form !

♀ ad. (No. 306), Terceira, 1200 ft., 4. iv. 1903. "Iris straw-yellow, eyelid vermillion. Bill pale bright yellow, tip of lower mandible carmine-red. Legs bright pale yellow." I have not yet come to a conclusion about the various forms of *Larus fuscus*, but in any case this example is very pale above.

[On the Cabras or Goat Islets, off Terceira, we found a large colony of this species, breeding on the ledges near the tops of these curious "stacks." The nests contained two or three fresh eggs on May 30th. The species was also seen breeding on the rocks between the islands of Pico and Fayal.

On the Cabras Islets we had an excellent opportunity of observing these birds from above, as they sat on or stood by their nests on the ledges below us. I was at first inclined to believe that the darker-backed birds were examples of *L. fuscus*, but I soon satisfied myself that all were of one species, *L. cachinnans*, and unfortunately did not procure specimens.

30. [*Larus ridibundus* L.

The Ponta Delgada Museum contains :

a—i. At different points of the shores of San Miguel.

Major Chaves informs us that the Black-headed Gull is a common species in the Azores.

We saw a flock feeding in company with *L. cachinnans* on some grass fields above Lameiro on March 10th, and observed a certain number of birds on the lake at Furnas, but have no record of having met with the species elsewhere.]

31. [*Larus marinus* L.

The Ponta Delgada Museum contains :

a—c. Ponta Delgada, San Miguel.

d. (albino), Ponta Delgada, San Miguel.

According to Major Chaves the Greater Black-backed Gull is fairly common in the Azores, but we have no record of having met with this species during the three months we spent amongst the islands.]

32. [*Rissa tridactylus* (L.)

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

Major Chaves informed us that the Kittiwake was a common species, but we never met with it.]

33. *Arenaria interpres* (L.)

2 ♂♂, 1 ♀, in magnificent spring plumage, were shot below the Caldeira, Graciosa, on April 25th, 1903.

[Local name : Maçarico.

The Ponta Delgada Museum contains :

a, b. Rosto de Cão, San Miguel.

We came across a large flock of Turnstones, including males and females, feeding on the high grass-slopes below the Caldeira, Graciosa, and five were secured at a shot. The male has more chestnut on the back than the female. According to Major Chaves the bird is common in the Azores, but we did not meet with it on any other occasion.]

34. [***Vanellus vanellus*** (L.)

Specimens in the Ponta Delgada Museum :

a, b. Povoação, San Miguel.

c. Sete Cidades, San Miguel.

A specimen of the Lapwing from Ponta Delgada was presented to the British Museum, and Major Chaves informed us that it not unfrequently occurs in the Azores.]

35. [***Squatarola squatarola*** (L.)

The Ponta Delgada Museum contains :

a. adult, Rosto de Cão, San Miguel.

A specimen of the Grey Plover killed at Ribeira Grande was presented to the British Museum. Major Chaves informed us that it was a rare straggler to the archipelago.]

36. [***Charadrius pluvialis*** L.

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

The Golden Plover is a rare visitor to the Azores.]

37. ***Aegialitis hiaticula*** (L.).

[The Ponta Delgada Museum contains :

a. Rosto de Cão, San Miguel.

A second immature Ringed Plover from the above locality was presented to the British Museum. Major Chaves informed us that the bird was not uncommon, but we did not meet with the species.]

This specimen has a remarkably small bill.

38. [***Aegialitis dubia*** (Scop.).

The Ponta Delgada Museum contains :

a. Flores (winter).

The Little Ringed Plover is said to be a rare straggler to the islands.]

39. ***Aegialitis alexandrinus*** (L.).

3 ♂♂, Paúl, Terceira, 30. iii. 1903.

1 ♀, San Pedro, Santa Maria, 1. iii. 1903.

“Iris brown ; bill black ; legs slate-black, paler on front of tarsus.”

[The Kentish Plover was not represented in the Ponta Delgada Museum until we presented specimens to Major Chaves. We first met with the bird on Santa

Maria, where a number were seen on the barren grassy ground between San Pedro and the south-west coast of the island. We again met with the species on Terceira, on the high grass-covered Pail to the north-east of Angra; lastly, we saw a number in company with a large flock of Turnstones on some large fields on the Caldeira, south Graciosa. Mr. F. D. Goldman also records this species from San Miguel and Fayal, and he procured specimens at both localities.]

40. [***Limosa limosa*** (L.).

The Ponta Delgada Museum contains :

a, b. Farnas, San Miguel.

An adult Black-tailed Godwit killed at Farnas in the spring was presented to the British Museum. Major Chaves informs us that this is an occasional visitor, and by no means common.]

41. [***Limosa lapponica*** (L.).

Macrorhamphus griseus Simroth (nec Gmelin), *Arch. f. Naturg.* i. p. 191 (1888).

The Ponta Delgada Museum contains :

a. Ribeira Grande, San Miguel.

b. Fajã de Cima, " "

According to Major Chaves the Bar-tailed Godwit is a rare straggler to the Azores.]

42. [***Numenius arquata*** (L.).

The Ponta Delgada Museum contains :

a. Rosto de Cão, San Miguel.

The Common Curlew is an occasional visitor, and not very rare.]

43. [***Numenius phaeopus*** (L.).

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

The Whimbrel is not very rare, and a specimen killed at Sete Cidades was presented to the British Museum.]

44. [***Totanus littoreus*** (L.).

[*Macrorhamphus griseus*, Simroth (nec Gmel.), *Arch. f. Naturg.* i. p. 191 (1888).

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

The above specimen of the Greenshank is the only one that has been procured in the archipelago.]

(*Totanus fuscus* is, according to Drouet, of rare occurrence on San Miguel, *Élém. Faun. Açor.* p. 125, 1861.)

45. [***Calidris arenaria*** (L.).

The Ponta Delgada Museum contains :

a. Rosto de Cão, San Miguel.

The above example of the Sanderling is the only known instance of its occurrence in the Azores.]

46. [*Tringa maritima* Gm.]

The Purple Sandpiper is not represented in the collection of the Ponta Delgada Museum, and we did not meet with the species. Mr. F. D. Godman obtained an adult male in summer plumage on Flores on May 19th, 1865. It was one of a small flock which, in company with some Turnstones, frequented the rocks near Santa Cruz.]

47. [*Tringa canutus* (L.).

The Ponta Delgada Museum contains :

- a. Ponta Delgada, San Miguel (in nearly full summer plumage).
- b. Relva, San Miguel (winter plumage).

Major Chaves informed us that the Knot was rather a rare visitor to the Azores.]

48. [*Tringa minuta* Leisl.]

Pelidna temminckii, Simroth (nec Leisl.), *Arch. f. Naturg.* i. p. 191 (1888).

The Ponta Delgada Museum contains :

- a. Rosto de Cão, San Miguel.

This is the only known instance of the occurrence of the Little Stint in the Azores.]

49. *Gallinago gallinago* (L.).

♀ ad. Caldeira, below Pico Cabaço, Flores, 16. iv. 1903. "Iris brown; bill dark horn-brown, lighter at base, slate-colour at base of lower mandible. Legs light greenish slate."

[Specimens in the Ponta Delgada Museum :

- a. Sete Cidades, San Miguel.
- b. Furnas, San Miguel.

A second example from Sete Cidades was presented to the British Museum.

We saw one or two Common Snipe on the marshy ground below the Caldeiras in Central Flores; one female, which was shot on April 16th, contained large eggs nearly ready to be laid.]

50. *Scolopax rusticola* L.

Scolopax Rusticola Linnaeus, *Syst. Nat.* ed. x. p. 146 (1758: "Habitat in Europa." Typical locality: Sweden, ex *Fauna Suecica*).

2 ♂♂, 1 ♀, Furnas, San Miguel, 2000 ft., 15. iii. 1903.

3 ♂♂, 2 ♀♀, 1 sex? Crater above Reguinho, Terceira, 2000 ft., 5—9. iv. 1903.

4 ♂♂, above Calheta, San Jorge, 1200 ft., 1, 2. v. 1903.

1 ♂, 1 pallus, above Horta, central Fayal, 2000 ft., 25. v. 1903.

3 ♂♂, above Santa Cruz, Flores, 100—1000 ft., 17, 18. iv. 1903.

"Iris dark brown; bill dark blackish-brown at tip, lighter at base of upper mandible, yellowish-horn at base of lower mandible; feet and legs pale yellowish-brown (lilac-brown, pale pinkish-brown, pale lavender-horn, pale lavender-brown), pinkish-horn at joints; one from Fayal: stone-yellow or clay-colour."

Pullus: "Bill blackish, legs purplish-brown, iris dark brown."

A magnificent aberration was shot above Calheta, San Jorge, 1200 ft., on May 3rd, 1903. Most of the upper surface is white, but some of the feathers have black tips, others are rufous with black tips; the upper tail-coverts are of the usual colour, the tail is only partially white, some of the outer wing-coverts are rufous, as

well as portions of the outer webs of the secondaries. The underside is pure white, only the chest and under tail-coverts having a mixture of buff and brown. "Iris brown (lighter than usual); bill horn-brown at tip, lighter at base; legs pale brownish-yellow."

It is somewhat strange that a resident race so far away from Europe should not differ from the continental form, but I am not able to find essential characters to separate it. The barrings on the underside are mostly wide and dark, but many European specimens are perfectly similarly barred, and some Azorean specimens have rather narrow and fine bars. Also the reddish colour on the rump varies considerably, as well as the size—quite as much as in European birds.

[Local name: Gallinhola.

Specimens in the Ponta Delgada Museum:

a. b. Furnas, San Miguel.

c. albino, Fayal.]

[We met with the Woodcock on all the islands of the Azores excepting Santa Maria, Graciosa, and Corvo; but though we did not happen to come across it on the first-named island, we heard of its occurrence there from the natives, who knew the "Gallinhola" well. On Graciosa it was not seen, and we were told that it does not occur there; but possibly this is a mistake, as the country above Praya seems well suited to its requirements. The breeding-season had already commenced when we reached the Azores, and the male birds might generally be seen fighting over the higher ground towards dusk, uttering their well-known whistle and croak. They were fairly common of an evening on the heath-covered moors above Furnas, and were sometimes met with in the daytime on the pine- and faya-covered ridges in the neighbourhood. On Terceira the Woodcock was fairly common right up to the edge of the Caldeira, and on several occasions we put up birds among the heather at an elevation of about 2000 ft. The species was also tolerably common on Pico, Fayal, and Flores; but on San Jorge by far the greatest numbers were met with. On this island we lived in a tiny stone house situated on the high ground amongst patches of giant heath, broom, and other bushes—ideal woodcock country—and many birds nesting in the neighbouring coverts passed over the house during their evening flight, and might be shot from the front door. Sometimes we saw the male and female rise together from some patch of broom; the latter, uttering a shrill whistle, made straight for her feeding-ground with a rapid flight, leaving the male to continue his solemn evening flight. Here Mr. Harwood shot a nearly pure white specimen.

On April 18th, while on the island of Flores, a living female Woodcock, which had been caught on its nest, was brought in to us; the four eggs had been broken in the struggle. On San Jorge on May 8th we procured a nest containing four slightly incubated eggs. On May 27th we found a nest with four broken eggs among the heath in a pine-wood on the top of Fayal, and collected a female accompanied by very young birds. The eggs are of the ordinary type, and measure 1.7 by 1.3 in.]

51. [*Phalaropus hyperboreus* (L.).

Specimen in the Ponta Delgada Museum:

a. Arrifes, near Ponta Delgada, San Miguel (in nearly full summer plumage).

The Red-necked Phalarope is a rare straggler to the Azores.]

52. [**Phalaropus fulicarius** (L.).

The Ponta Delgada Museum contains :

a. Relva, San Miguel, in winter plumage.

The Grey Phalarope is a rare straggler to the Azores.]

53. [**Oedicnemus oedicnemus** (L.).

The Ponta Delgada Museum contains :

a. ad. Sete Cidades, San Miguel.

The Thick-knee is a rare straggler to the Azores.]

54. **Comatibis eremita** (L.).

[The Ponta Delgada Museum contains :

a. Furnas, San Miguel, February.

This is the only known instance of the occurrence of the Red-cheeked Ibis in the Azores.]

55. [**Platalea leucorodia** L.

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

The Spoonbill is only known to have occurred once.]

56. [**Ardeola ralloides** (Scop.).

Specimens in the Ponta Delgada Museum :

a, b. Ponta Delgada, San Miguel.

A specimen of the Squacco Heron killed at Ribeira Grande was presented to the British Museum. Major Chaves informs us that the species is not very rare.]

57. [**Ardetta minuta** (L.).

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

b. Rosto de Cão, „ „

c. Santa Cruz, Flores.

A specimen of the Little Bittern killed at Rosto de Cão was presented to the British Museum. The species is rarely met with.]

58. **Herodias alba** (L.).

Mr. Godman says that it has occurred on the central group (Terceira).

59. **Herodias egretta** (L.).

Has occurred on Terceira (cf. Godman, *Azores*, p. 34).

60. **Garzetta garzetta** (L.).

Has occurred on the central group (Godman, *Azores*, p. 34).

(Simroth, *Archiv. f. Naturg.* i. p. 193 (1888) mentions "*Ardea gularis*" from specimens obtained on San Miguel.)

61. [**Mesophoyx intermedia** (Wagl.).

The Ponta Delgada Museum contains :

a. ♂ Capellas, San Miguel.

The above is the only known instance of the occurrence of this Egret.]

62. [**Ardea cinerea** L.

Local name : Arêlo.

Specimens in the Ponta Delgada Museum :

a, b. Sete Cidades, San Miguel.

We saw several examples of the Common Heron about the lakes at Furnas and Sete Cidades, and Major Chaves informed us that he considered the species to be fairly numerous about other lakes on San Miguel. We saw a pair on a lake in one of the Caldeiras in Central Flores, and a like number in the Caldeira, Graciosa.]

63. [**Ardea purpurea** L.

The Ponta Delgada Museum contains :

a, b. Livramento, Rosto de Cão, San Miguel.

c. Salga.

According to Major Chaves the Purple Heron is a very rare straggler to the Azores.]

64. **Nycticorax nycticorax** (L.).

[The Ponta Delgada Museum contains :

a, b. Ponta Delgada, San Miguel.

An adult Night Heron from Ponta Delgada and an immature from Ribeira Grande were presented to the British Museum. Major Chaves tells us that this is not a very rare visitor to the Azores.]

65. [**Botaurus stellaris** (L.).

The Ponta Delgada Museum contains :

a. Lagôa, San Miguel.

The Common Bittern is only known to have occurred once.]

66. [**Botaurus lentiginosus** (Mont.).

Specimen in the Ponta Delgada Museum :

a. Flores.

The above example of the American Bittern is the only instance of its having occurred in the archipelago.]

[Morelet (*Hist. Nat. Açor.* p. 53 (1860) mentions the Stork (*Ciconia ciconia*) as an accidental straggler to the Azores. (Cf. Simroth, p. 193.)]

67. **Anas boschas** L.

[Local name : Pato-real.

The Ponta Delgada Museum contains :

a, b. Furnas, San Miguel.

The Wild Duck is not uncommon, and a male from Sete Cidades was presented to the British Museum.

We found several pairs breeding on the lakes in the Caldeiras in central Flores, but did not meet with it on any of the other islands.]

68. **Anas crecca** (L.).

[Local name : Marreca.

The Ponta Delgada Museum contains :

a—d. ♂ ♀. Lagôa de Carvão and from Sete Cidades, San Miguel.

A pair of Common Teal from Furnas were presented to the British Museum.

Major Chaves informs us that it is tolerably common and breeds on San Miguel, but we never met with the species on any of the islands.]

69. **Mareca penelope** (L.).

[Local name : Marreca.

The Ponta Delgada Museum contains :

a. ♀. Sete Cidades, San Miguel.

The Wigeon is said to be not uncommon.]

70. [**Mareca americana** (Gm.).

Local name : Marreca.

The Ponta Delgada Museum contains :

a. ♂. Sete Cidades, San Miguel.

The American Wigeon is said to be not uncommon.]

71. [**Fuligula ferina**.

The Ponta Delgada Museum contains :

a, b. ♂ ♀. Sete Cidades, San Miguel.

The Common Pochard is a rare visitor.]

72. [**Clangula clangula** (L.).

The Ponta Delgada Museum contains :

a. ♀. Azores (? San Miguel).

The Golden-eye is a very rare straggler.]

73. [**Harelda glacialis** (L.).

The Ponta Delgada Museum contains :

a—c. ♂ ♀. Relva, San Miguel (winter).

The Long-tailed Duck is not a very rare winter visitor.]

74. [**Oedemia nigra** (L.).

The Ponta Delgada Museum contains :

a. ♀. Ponta Delgada, San Miguel.

The Common Scoter is not very rare.]

75. [**Somateria mollissima** (L.).

The Ponta Delgada Museum contains :

a. ♀ imm. Rosto de Cão, San Miguel.

The above is the only instance of the Eider Duck having occurred in the Azores.]

76. [**Anser anser** (L.).

The Ponta Delgada Museum contains :

a. ad. Rosto de Cão, San Miguel.

Major Chaves informs us that only two examples of the Wild Goose have occurred in the islands to his knowledge.]

77. [**Branta leucopsis** (Bechst.)

The Ponta Delgada Museum contains :

a. ad. Lake of Furnas, San Miguel.

The above-mentioned example of the Barnacle Goose is the only known instance of its occurrence.]

78. [**Mergus serrator** (L.).

The Ponta Delgada Museum contains :

a—c. Ponta Delgada, San Miguel.

An adult female of the Red-breasted Merganser, shot at Ribeira Grande, was presented to the British Museum. Major Chaves informs us that it is not a very rare visitor to the Azores.]

79. [**Phalacrocorax carbo** (L.).

The Ponta Delgada Museum contains :

a. Relva, San Miguel.

The Cormorant is a scarce straggler to the islands.]

80. [**Sula bassana** (L.).

The Ponta Delgada Museum contains :

a. imm. Ribeira Grande, San Miguel.

b. „ Rosto de Cão, „ „

The Gannet is a very rare visitor to the Azores.]

81. [**Fregata aquila** (L.).

The Ponta Delgada Museum contains :

a. ♂ ad. Ponta Delgada, San Miguel.

According to Major Chaves the Larger Frigate-Bird is not common.]

82. [**Aquila chrysaëtus** ?

During our visit to Graciosa we were informed that some species of Eagle had recently taken up its abode on the island, and frequented the Caldeira and other parts of the island. It was said to have killed a number of lambs, kids, etc., and the natives were exceedingly anxious that we should shoot it. On the day that we descended by ropes into the Furna do Enxôfre to visit the boiling spring and underground lake in the centre of the Caldeira, the bird was observed by some of our men sailing above the edge of the crater, but we did not see it. Probably it was an immature Golden Eagle.]

83. *Buteo buteo insularum* Floer.

Buteo buteo insularum Floericke, *Mitt. österr. Reichsb. f. Vogelk. und Vogelsch.* Wien iii. p. 64 (1903 : Gran Canaria).

The Buzzards from the Azores are very closely allied to typical *buteo* from North Europe, but they differ in two points : they are as a rule distinctly smaller, the wings of the males measuring not more than 34 to 36, those of the females 36 to 38 cm., thus averaging about 2 to 3 cm. shorter than those of typical North European *buteo*. Secondly, they are much more uniform in colour, being deep brown above, while below they have deep brown praepectoral and abdominal bands of brown spots divided by a whitish area. In only a few specimens are these areas not distinct.

I cannot see that these Azorean buzzards differ from those from the Canary Islands, which have been named *Buteo buteo insularum*. I therefore accept this name for the Azores birds.

Mr. Grant obtained 23 specimens : 7 from Terceira, 1200 and 1500 ft. high ; 4 from San Jorge, 1200 and 1300 ft. high ; 7 from Graciosa ; 2 from San Miguel, 1000 ft. high ; and 3 from central Fayal, 2500 ft. high. The iris is marked as light brown (brown, reddish-brown, pale brown, very light brown, almost yellowish brown). The bill blackish (blackish horn-colour), cere pale yellow (light yellow), legs and feet yellow (dark yellow, darker yellow, pale bright yellow, light yellow). The length was measured in the flesh : ♂ 18, 18·2, 18·6, 18·7, 19·3, 19 in. ; ♀ 18·9, 19·1, 19·7, 20, 20·3, 21 in.

[Local name: Milhafre.

Specimens in Ponta Delgada Museum :

a, b. Arrifes, near Ponta Delgada, San Miguel.

c. Ribeira Grande, San Miguel.

A fourth specimen of the Buzzard was presented to the British Museum.

The common Buzzard is the only indigenous bird of prey found in the Azores. The Portuguese name for the Goshawk is "Açor," and the early settlers, supposing the large hawks they found so numerous on the islands to be of that species, named the group accordingly, though as a matter of fact the Goshawk has never been known to occur there, even as a straggler.

The "Milhafre" is found throughout the eastern and central islands, and is a common and conspicuous bird from sea-level to the highest ground ; but on the western islands of Flores and Corvo we met with none, and were told that it only occurs there as an occasional visitor. As so conspicuous a bird cannot easily be overlooked, this information is no doubt correct.

When one says the "Milhafre" is common, it must be understood that it is common as hawks go, and that a dozen pairs may be seen in a long day's march. A pair or two are to be found about every town and village, either perched on some tall tree or wall, or soaring round in graceful circles on the look-out for rabbits, rats, or chickens, of which they destroy large numbers. They are also useful scavengers, devouring all sorts of carrion, but the natives hate them on account of their ravages in the poultry-yard. Though apparently bold and comparatively tame, especially in the neighbourhood of dwellings, they are really extremely wary and difficult to approach if one is armed with a gun. When at rest they always select some commanding position whence an uninterrupted view can be had of the surrounding country, so that to stalk these birds is generally

out of the question : and though one may often walk boldly up to within a hundred yards, just as one begins to hope for a shot the bird slips quietly off and settles on some equally unapproachable tree.

With a small .250 rifle it would be easy to collect numbers, but unfortunately we had not brought one with us. Long shots with a 12-bore are seldom any use, unless one is lucky enough to break a wing, as the Buzzard will carry away a heavy charge without turning a feather. However, opportunities occur from time to time, especially on wet, misty days, when the birds seldom leave their perch unless disturbed, and we gradually collected a long series of specimens of all ages, half of which were shot and the remainder trapped. Traps are much the easiest means of securing these birds, a dead rat or rabbit being a safe bait.

On Terceira, where we procured most of the finest and oldest specimens, four traps were placed round a dead rat in an especially favourable position, and we caught four buzzards in two days, a pair being secured simultaneously. On one other occasion we met with a similar success: on the last morning of our trip two traps, placed on either side of a rabbit on a ridge below the crater of Fayal, secured two male birds. On Graciosa, where we found the Buzzard more numerous than on any other island, almost all the specimens were shot. Near the village of Funchal, on the west side of the island, there was an old orange Quinta, surrounded by high walls and fringed by large trees. As an owl was reported to have been seen there, we visited the spot one evening, and had scarcely got inside the garden when eight buzzards got on the wing, and before they had time to escape two successful rights and lefts stopped four. This was our greatest success, for though on another occasion on Fayal we shot three, they fell amongst dense wet faya-covert, and we only succeeded in finding one.

The Buzzard does not appear to breed very early in the Azores, and it was not till we landed on Pico in the middle of May, that we found a pair nesting in the rocks at the top of a small crater densely clad with high bush. A little earlier in the month we trapped a fine female on San Jorge, containing a large egg almost ready to be laid. A male trapped on the latter island managed to break the strings and go off with a trap on either foot; but so weighted he was unable to rise, and after a hunt we luckily secured him about a hundred yards from the bait.]

84. *Cerchneis tinnunculus* (L.).

Falco Tinnunculus Linnaeus, *Syst. Nat.* Ed. x. p. 90 (1758: "Habitat in Europae turribus," typ. loc. Sweden; the first quotation being "7n. suec. 67").

A female which I examined belongs to the common European form.

[The Common Kestrel is an occasional visitor to the Azores.

Specimens in Ponta Delgada Museum:

a. Sete Cidades, San Miguel.

b. Ponta Delgada, " "

c. Ribeira Grande, " "

A fourth specimen, killed at Arrifes, San Miguel, was presented to the British Museum.]

85. [*Falco peregrinus* L. ?

A single Falcon, almost certainly of this species, was seen by me flying from Lameiro, on the north coast of San Miguel, towards the hills of the interior.]

86. [*Strix flammea* L.

Local name : Cornija.

The Common Barn Owl is a rare species ; it was heard on one occasion at Lameiro, on the north coast of San Miguel.

Specimens in Ponta Delgada Museum :

a. Sete Cidades, San Miguel.]

87. *Asio otus* ? subsp.

A young bird in down, with wings and tail half grown, belongs to a form of *Asio otus*, which is either the typical form or an unknown subspecies. It was obtained in April 1903 at Ponta Delgada, San Miguel, and differs from similarly aged examples of *Asio otus otus* from Europe in being darker and greyer, and not so buffy, especially on the abdomen. Another rather older bird from Arrifes, San Miguel, however, agrees perfectly with young birds from Europe, being underneath buffy, not greyish.

[Local name : Mõcho.

Specimens in the Ponta Delgada Museum.

a—c. ad. et juv. Sete Cidades, San Miguel.

An adult bird from Sete Cidades was presented to the British Museum.

The Long-eared Owl is not a common species, but occurs in the neighbourhood of Sete Cidades, San Miguel, and breeds there. On one occasion we observed an owl, no doubt of this species, above Calheta, on San Jorge, and a specimen was subsequently procured for us there by a local sportsman ; but when it reached the hands of our friend Senhor da Cunha it was too much decomposed to be worth preserving. We procured a young bird which had been caught in the town of Ponta Delgada, and handed over to Major F. A. Chaves ; it had evidently been brought down from the hills, probably from Sete Cidades, and had subsequently escaped.

During the whole of our stay in the Azores, though often out of doors till twelve or one o'clock in the morning, we never once heard an owl hoot. The difficulty of obtaining these birds is very great ; pole-traps placed in the most likely spots, in localities where we knew owls were to be found, were invariably avoided, and during many nights of patient watching we never once had the satisfaction of firing a shot at one of these birds.

While fighting woodcock one evening on the top of San Jorge, just as it was becoming dark, a large owl flew slowly over an open heath-covered patch in front of us. I had taken the cartridges from my gun, and was engaged in lighting the moth-lamp ; but Mr. Harwood, who was standing beside me, fired a couple of unsuccessful shots at the bird. I had a good view of it as it topped a neighbouring bank, and noted that it was a much larger bird than either *A. otus* or *A. accipitrinus* ; it looked to me exactly like the Tawny Owl (*Syrnium aluco*).

88. *Asio accipitrina* (Pall.)

Strix accipitrina Pallas, *Reise d. versch. Prov. d. Russ. Reichs*, i. p. 455 (1801 : "Ad mare Caspium").

[Local name ; Mõcho.

The Short-eared Owl is a scarce species in the Azores, and apparently only an occasional visitor to the islands. It is not known to breed there. An immature

bird presented to the British Museum by the Ponta Delgada Museum has the general colour of the underpart deep tawny, and is of a darker tint than any specimen in the National Collection, but Dr. Hartert tells me that there are similarly dark specimens in the Tring Museum.

Specimens in the Ponta Delgada Museum :

a. Sete Cidades, San Miguel.]

89. [**Ceryle alcyon** (L.)

The Ponta Delgada Museum contains :

a. adult, Santa Cruz, Flores.

The above example of the North American Belted Kingfisher is the only instance of the occurrence of this species in the Azores. Major Chaves was on a visit to the island of Flores when the bird was killed, and examined it in the flesh.]

90. [**Upupa epops** L.

Specimens in the Ponta Delgada Museum :

a. Sete Cidades, San Miguel.

b. Ribeira Grande, San Miguel.

According to Major Chaves the Hoopoe is a rare straggler to the Azores.]

91. [**Merops apiaster** L.

The Common Bee-eater is only known in the Azores as a rare straggler.

Specimens in the Ponta Delgada Museum :

a. Porto Formoso, San Miguel.

Two birds were shot some years ago at the above locality, and Major Chaves informed me that the second specimen was still preserved in the house of the man who obtained them.]

92. [**Cuculus canorus** L.

The Common Cuckoo is a rare straggler to the Azores.

Specimens in the Ponta Delgada Museum :

a, b. Fajã de Cima, near Ponta Delgada, San Miguel.

c. Ribeira Grande, San Miguel.

An adult killed on San Jorge was presented to the British Museum.]

93. [**Coccyzus erythrophthalmus** (Wils.)

The Ponta Delgada Museum contains :

a. ad Ponta Delgada, San Miguel.

According to Major Chaves the above specimen is the only example of the American Black-billed Cuckoo that has ever been met with in the islands.]

94. [**Dendrocopus minor** (L.)

As already mentioned in the introduction, we found no trace of the Lesser Spotted Woodpecker either on San Miguel or on Terceira, though especially on the look-out for it. Major Chaves informed us that though he had been for many years endeavouring to secure a specimen of this species for the Museum at Ponta Delgada,

and had offered a substantial reward, no examples had been forthcoming; and he was strongly inclined to doubt its existence. On the other hand, Mr. F. D. Godman tells us that his collector, Mr. Brewer, saw a specimen of this bird at Furnas in 1865, and having watched it for some time, had no doubt as to its identity; and Senhor Jeronymo of the Royal Hotel at Furnas, informed us that, as a boy, he perfectly remembered seeing the species in that locality on more than one occasion. It is quite possible that this Woodpecker, which was said to be very uncommon at the time when Mr. Godman published his *Natural History of the Azores*, has since become extinct.

The specimen recorded by Dr. Simroth: cf. *Arch. f. Naturg.* i. p. 184 (1888), which is preserved in the Ponta Delgada Museum, was procured in Portugal, and the same remark applies to the specimen of *D. major*; the examples of both these species have the locality clearly marked.]

95. *Apus apus* (L.)

[Specimens in the Ponta Delgada Museum :

- a. Santa Maria.
- b. San Miguel.

A specimen of the Common Swift killed at Sete Cidades, San Miguel, was presented to the British Museum. Major Chaves informed me that this species was only known as a straggler to the Azores, and occurs more frequently on Santa Maria than it does on San Miguel.]

96. [*Collocalia fuciphaga* (Thunb.)

The Ponta Delgada Museum contains :

- a. ad. Azores.

Major Chaves informs us that this unique straggler was undoubtedly obtained in the Azores, and sent in the flesh to the Ponta Delgada Museum. The exact locality where it was killed has unfortunately been lost. The home of this Swiftlet is the Malay Archipelago and Papuasia, whence it ranges westwards to the Seychelles, northwards to the Philippine Islands, and eastwards to the islands of western Polynesia.]

97. [*Turdus mustelinus*.

The Ponta Delgada Museum contains :

- a. ad. Azores.

The Wood-Thrush of North America has once been obtained in the Azores; unfortunately the record of the precise locality has been lost.]

98. [*Turdus viscivorus* L.

The Ponta Delgada Museum contains :

- a. ad. Ribeira Grande, San Miguel.

A second specimen from the same locality was presented to the British Museum.

Major Chaves informed us that the Missel Thrush was a very rare straggler to the Azores.]

99. *Turdus merula azorensis* subsp. nov.

The Blackbird of the Azores agrees best with the form inhabiting the Canaries and Madeira. It has the same wing, somewhat shorter than in European examples, the same rather dark, not very rufous coloration of the females, the same very deep glossy black plumage, the same large and rather orange bill of the males. It differs, however, in having a shorter tail, which is about 5 to 10 mm. shorter in the males. I am therefore obliged to give this form a new name. Type in the British Museum: ♂ ad. No. 448. South of Santa Cruz, Graciosa, 22. iv. 1903. Generally the rudimentary first primary is rather longer, and the distance from the tip of the longest secondaries to the tip of the wing rather short. The tail of males is not over 120, while in *T. m. cabreræ* it is generally about 105 to 108 mm.

Mr. Grant collected a magnificent series of this Blackbird:

2 ♂♂, 2 ♀♀, Sta. Maria, 300–1300 ft., 27, 28. ii., 1. iii. 1903.

3 ♂♂, 1 ♀, Furnas and Lameiro, San Miguel, 500–2000 ft., 12–16. iii. 1903.

7 ♂♂, 5 ♀♀, Terceira, 1500–2000 ft., 28–30. iii. 1903.

4 ♂♂, 1 ♀, Graciosa, 22, 23. iv. 1903.

2 ♂♂, 3 ♀♀, above Calheta, San Jorge, 1200–2000 ft., 3, 4, 5. v. 1903.

2 ♂♂, 1 ♀, Pico, 900–1000 ft., 13, 17. iv. 1903.

1 ♂, 1 ♀, above Caes de Pico, 800 ft., 20. iv. 1903.

2 ♂♂, 1 ♀, 1 ♂ juv., above Horta and Flamings Valley, Fayal, 500–2500 ft., 25, 26, 28. v. 1903.

2 ♂♂, 4 ♀♀, near Sta. Cruz, Flores, about 200–1000 ft., 15, 16, 19. iv. 1903.

2 ♂♂, 1 ♀, Corvo, 500 ft., 14. iv. 1903.

♂ ad.: "Iris brown; bill and skin round eye orange-yellow; legs brown."

♀ ad.: "Iris brown; bill dull orange-yellow, dark (dusky) at base; legs (dark) brown."

[Local name: Melro.

Specimens in the Ponta Delgada Museum:

a—d. Ponta Delgada, San Miguel.

Some of the above specimens are partial albinos, and locally known as Melro-marchante.

This species is found on every island of the group, and common from sea-level to the highest ground, wherever faya, heath and other suitable cover occurs. It is perhaps most abundant on Terceira, St. Jorge and Fayal, and less numerous on Graciosa and Corvo. When met with in the neighbourhood of houses and gardens it is often very tame, and, unlike the Madeira Blackbird, is seldom really difficult to approach even on the high ground.

Its habits call for no special remark, but both its song and alarm-note differ somewhat from those of *Turdus merula* in Great Britain.

On our arrival at Santa Maria, on February 27th, its harsh, raucous alarm-note, like a hoarse laugh, at once attracted our attention, and we noted that it differed from that of the British bird in being pitched in a much lower key. It was not until our visit to Terceira, on March 29th, that we heard a number of male birds singing. Each note of their fine melodious whistle was more sustained than that of the British bird, and the whole song delivered in much slower time.

The first nest found, on April 26th, was situated on a ledge overhanging the brink of the Furna do Euxófre, in the Caldeira, Graciosa, and contained two fresh eggs. The full complement of eggs appears to be three, but frequently only two are laid, and we found several nests containing two young birds, indicating that the latter number is perhaps more usual.

The eggs are of the usual type: two clutches, containing three eggs each, from San Jorge, being more heavily spotted, while the third, containing two eggs, from Graciosa, has the reddish-brown markings smaller and less numerous. The measurements vary from 1.15—1.2 × 0.85—0.9 in.]

100. *Saxicola oenanthe leucorrhoa* (Gm.).

Motacilla leucorrhoa, Gmelin, *Syst. Nat.* i. p. 966 (1788—ex Buffon. Senegal).

A female of the large Greenland form of the Wheatear (wing 106 mm.) was presented by the Ponta Delgada Museum.

As no measurements were taken, it is of course uncertain whether the other specimens in the Ponta Delgada Museum belong to the large form (*leucorrhoa*) or the smaller one. It is, however, probable that both forms occur there, but that the large form is commoner, though the small one also occurs sometimes. The birds found breeding by Mr. Godman in the old crater on Corvo may have belonged to the smaller form, *S. oe. oenanthe*; but the male procured on Flores belongs to the large race, its wing measuring 105 mm.

[Specimens in the Ponta Delgada Museum:

a, b. Ponta Delgada, San Miguel.

c. Lagôa " "

d. Ribeira Grande " "

Major Chaves informed me that this bird was a regular visitor to the islands, and not very rare; but we never met with it, though much of the ground visited was eminently suited to its habits.

Mr. F. D. Godman, who was the first to record this species from the group, procured a specimen in Flores, and found four or five pairs breeding in the crater on Corvo.]

101. *Erithacus rubecula* (L.).

Motacilla Rubecula Linnaeus, *Syst. Nat.* ed. x. p. 188 (1758—"Habitat in Europa." Typ. loc. Sweden: ex *Fama Suecica* 226).

12 ♂ ♀, Santa Maria (Pico, Almagreira), 27. ii. to 2. iii. 1903.

20 ♂ ♀, San Miguel (Sete Cidades, Ponta Delgada, Lameiro), March 1903.

14 ♂ ♀, Terceira (Reguinho, Serreta, 1500 ft.), 28. iii. to 8. iv. 1903.

6 ♂ ♂, Graciosa (Caldeira, Sta. Cruz, Praya), 22. to 30. iv. 1903.

8 ♂ ♀, San Jorge (above Calheta, 1200 to 2000 ft.), May 1903.

7 ♂ ♀, Pico, May 1903.

4 ♂ ♀, Fayal (1500 to 2500 ft.), May 1903.

"Iris brown, bill blackish, feet brown."

It is very remarkable that the birds of these islands, like those from Madeira and the Canaries—with the exception of Tenerife and Gran Canaria—all belong to the pale-throated form, apparently indistinguishable from *E. r. rubecula*, while the British Isles are inhabited by the dark-throated *E. r. melophilus*, Tenerife and Gran Canaria by *E. r. superbus*. No constant difference can be seen between birds from

the various islands of the Azores and between those from the higher and lower elevations.

[Local name : Vinagreira.

Specimens in the Ponta Delgada Museum :

" -c. Ponta Delgada, San Miguel.]

The Robin was found in the eastern and central islands of the group, but was not met with in Flores and Corvo. It was most numerous on Santa Maria, San Miguel, and Terceira, fairly common on San Jorge, Pico, and Fayal, and comparatively scarce on Graciosa. On all these islands it was met with from sea-level to the highest ground. In the town gardens and in the neighbourhood of houses the birds were as a rule fairly tame : but those inhabiting the higher woods and heath-clad hills were very shy and difficult to approach, as is the case in Madeira. The most richly coloured birds, with very bright breasts and dark brown backs, were found in the gardens round Ponta Delgada, while all, or almost all, those met with on the higher ground were paler in colour and somewhat smaller in size. The song did not differ in any marked degree from that of our common Robin.

The first nest was found on April 6th below the Caldeira, in central Terceira, at an elevation of about 2000 ft. It was placed on a ledge of rock overhung by heath, and contained several broken eggs, which had probably been destroyed by some goat-herd. On May 27th I found two more similarly placed nests below the Caldeira of Fayal, at an elevation of about 2500 ft. Each contained three fresh eggs of the ordinary Robin type, but perhaps a trifle smaller. In one clutch of nearly perfectly oval eggs the rufous markings are suffused and very indistinct, forming a somewhat indefinite zone round the larger end ; in the second clutch, with the eggs slightly more pointed, the ground-colour is whiter and the markings more distinct, especially on two of the eggs. The measurements vary from 0.75—0.8 × 0.57—0.58.]

102. *Sylvia atricapilla* (L.).

Motacilla atricapilla Linnaeus, *Syst. Nat.* ed. x. p. 187 (1758—"Habitat in Europa." Typ. loc. Sweden).

1 ♂, 2 ♀, Santa Maria, 300—400 ft., 28. ii., 3. iii. 1903.

4 ♂♂, 4 ♀♀, Ponta Delgada, Furnas, and Lameiro, San Miguel, 800—1000 ft., 6, 7, 11, 16, 19. iii. 1903.

2 ♂♂, 3 ♀♀, Reguinho, Terceira, 1200—1500 ft., 30, 31. iii., 2. iv. 1903.

1 ♂, 1 ♀, Santa Cruz, Graciosa, 200 ft., 21. iv. 1903.

2 ♂♂, 1 ♀, above Calheta, San Jorge, 1000—1200 ft., 2, 5, 9. v. 1903.

2 ♂♂, 1 ♀, Pico, 900 to 1000 ft., 13, 15, 18. v. 1903.

1 ♂, above Horta, central Fayal, 1000 ft., 28. v. 1903.

2 ♂♂, 1 ♀, above Santa Cruz, Flores, 500—1000 ft., 16, 17, 18. iv. 1903.

♂. "Iris brown, upper mandible black, lower slate, legs slate."

I cannot see any sufficient reason to separate the Blackcap of the Azores from the European form. It does not belong to the small and dark race inhabiting Madeira and the Canaries, but is inclined to be large. The wing is sometimes very long, attaining a length of 78 and 79 mm., while in the European race it does not as a rule exceed 75; the majority of specimens are not, however, larger than our European form. In colours I find no essential differences.

[Local name : Tonto.

The Ponta Delgada Museum contains the following specimens :

a--c. ♂ and ♀ ad., Ponta Delgada, San Miguel.

d. ♂ ad. (albino) „ „ „ „

Specimen *d* is a very curious variety, having almost the whole plumage white, with narrow transverse bands of greyish across the feathers; the top of the head is of the usual black colour, and the chin and throat are suffused with dusky, suggesting the variety *S. heinekeni*.

A second albino specimen, with the cap mostly white, is now in the Rothschild Museum.]

[The Blackcap was met with on all the islands throughout the group, but is very unevenly distributed. It is most numerous by far on San Miguel, and, as might be expected, rarest on Corvo, where there is hardly any suitable covert, and only a few birds were seen in the reed-hedges near the village of Corvo. Its range is by no means confined to the gardens on the low ground, for on all the islands, except Corvo, we found it scattered about in pairs over the juniper and heath-covered hills up to an elevation of about 3000 ft. We noted birds in full song at Lameiro, San Miguel, on March 8th; but they did not begin to breed till towards the end of May, and we were not successful in finding a single nest with eggs. The habits and song do not differ from those of British specimens.]

103. [*Sylvia atricapilla* aberr. *heinekeni*.

Local name : Touto-vinagreiro.

The Ponta Delgada Museum contains :

a. adult. Ponta Delgada, San Miguel.

A second specimen from the same locality was presented to the British Museum.

Major Chaves informs us that this variety of the Blackcap is very rare in the Azores. I once met with a specimen at Biscoitos, on the north coast of Terceira, but was unable to secure it.]

104. *Regulus regulus azoricus* Seeb.

Regulus cristatus var. *azoricus* Seebohm, *Hist. Brit. B.* i. p. 454 (Azores).

9 ♂♂, 1 ♀, Sta. Maria, 400—1000 ft., 27. ii., 2, 3, 4. iii. 1903.

26 ♂ ♀, San Miguel, 300—1000 ft., 6—22. iii. 1903.

4 ♂♂, 9 ♀♀, Terceira, 1000—1500 ft., 3, 7, 8. iv. 1903.

7 ♂♂, 7 ♀♀, San Jorge, 1000—2000 ft., 2—7. v. 1903.

7 ♂♂, 5 ♀♀, Pico, 800—3000 ft., 14—22. v. 1903.

7 ♂♂, 1 ♀, Fayal, 2000—2500 ft., 25—27. v. 1903.

5 ♂♂, 7 ♀, Flores, 400—2000 ft., 15—18. iv. 1903.

“Iris brown, bill black; legs light brown, feet yellowish (yellow, yellowish-brown).”

The Azorean form of the Golderest differs from typical *regulus* in having a distinctly longer bill. The wing is slightly shorter and the upper surface a shade darker, but the last character is not quite constant.

There is a great variation in the colour of the underside, which is olive-buff with a yellow tinge in some, but buff, almost whitish, in others. In the large series from San Miguel every specimen has an olive-buff under-surface, while in

the specimens from the other islands it is paler and more whitish. This cannot be a subspecific difference, because :

- (1) A similar variation is seen in other forms of *Regulus regulus*, though in that case the dark birds are those shot in autumn and winter, and the light ones in spring.
- (2) Among the birds from Terceira some are dark, some light.
- (3) The birds from Santa Maria, which is near to San Miguel and farthest away from the central group, are very light, and not at all like the dark San Miguel birds. The distribution of a dark and light form would thus not be comprehensible.

[Local name : Estrellinha.

Specimens in the Ponta Delgada Museum :

a—c. Ponta Delgada, San Miguel.

The Goldcrest is met with on most of the islands, but we did not find it on Corvo, though it may possibly occur there, nor was it met with anywhere on Graciosa. Mr. Filipe Andrade informed me that during his eighteen years' residence on Graciosa he had twice come across the species on the faya-covered hillocks near the village of Funchal, on the west side of the island ; but we did not meet with it there, and probably the birds seen were accidental stragglers. On the islands where it occurs its range extends from sea-level to the highest ground, wherever the faya and heath bushes flourish, but it is most numerous on the intermediate slopes. It is very common on Santa Maria, San Miguel, San Jorge, and Flores, but less numerous on Terceira, Pico, and Fayal. In the woods about Furnas and Sete Cidades it abounds, being especially plentiful in the pine woods and clumps of *Cryptomeria japonica*. Its habits and notes are perfectly similar to those of our English Goldcrest. In the middle and end of May some of the birds obtained at Pico and Fayal were evidently about to breed, for several of the females contained eggs nearly ready to be laid ; but we were never able to find a nest. In the dense faya-plantations most frequented by this species bird-nesting is extremely difficult, and no help is to be had from the natives.

The birds from St. Michael's are of a much yellower tint than those found on the other islands.]

105. [*Hirundo rustica* (L.)

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

The Common Swallow is a very rare straggler to the Azores.]

106. [*Chelidon urbica* (L.)

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

The House-Martin only occurs in the Azores as a very rare straggler.]

107. *Motacilla boarula schmitzi* Tsch.

Motacilla boarula schmitzi Tschusi, *Ornith. Jahrb.* xi. p. 223 (1900) Madeira).

It is after some hesitation that I am using the name given to the Madeiran form for the Azorean subspecies. It is very similar to *M. boarula boarula*, but the ear-coverts are extremely dark, the moustachial white line is somewhat reduced, and

the upper surface more slaty. These are exactly the reasons why the Madeiran form has been separated, but the variability of the Azorean birds is great. The wing varies from 81 to 88 mm. The third rectrix from the outside varies in colour. In the European form it is generally white with a narrow stripe on the inner web and practically the whole of the outer web black. In the Madeiran race it is similar, but occasionally much blacker, having only a white patch near the tip. In the Azorean birds it is blacker, specimens like the blackest ones from Madeira usually being not uncommon.

Mr. Grant sent the following series :

1 ♀, 1 sex not marked, Sta. Maria, 300—400 ft., 28. ii., 3. iii. 1903.

5 ♂♂, 3 ♀♀, San Miguel, 500—2300 ft., 11—23. iii. 1903.

6 ♂♂, 1 ♀, Terceira, 1200—1500 ft., 31. iii.—6. iv. 1903.

2 ♂♂, Graciosa, 22. iv. 1903.

4 ♂♂, 3 ♀♀, San Jorge, 1200—2000 ft., 5—10. v. 1903.

2 ♂♂, 1 ♀, Pico, 1000—2500 ft., 13—17. v. 1903.

4 ♂♂, 2 ♀♀, Fayal, 1000—2500 ft., 24—28. v. 1903.

2 ♂♂, 3 ♀♀, Flores, 200—1000 ft., 15—19. iv. 1903.

1 ♂, Corvo, 500 ft., 14. iv. 1903.

“Iris brown, bill black; feet light brown, legs paler than toes.”

[Local name: Arveloa or Arvelinha Labandeira in Flores, Corvo, and the central islands.

The Ponta Delgada Museum contains :

a—c. Ponta Delgada, San Miguel.

The Grey Wagtail was met with on every island throughout the Azores, and occurs from sea-level to an elevation of about 3000 ft., for several pairs were met with on San Jorge on the pools among the grassy slopes near the base of one of the highest points. The species was perhaps most numerous on Santa Maria and Terceira, and least plentiful on Flores, though by no means scarce on that island.

When we arrived at Santa Maria in the end of February nearly all the Wagtails collected were found to be in moult, though some of the males had already assumed the fully black throat characteristic of the breeding plumage. On San Miguel, a few weeks later, several birds with the throat more or less completely black proved on dissection to be females, and this fact led me to look closely into the matter, as I had always believed that the female Grey Wagtail had the throat entirely white, or white with only a few black feathers. By the middle of March almost all the birds of this species were met with in pairs, and after shooting a considerable number we found that in many instances the nearly black-throated birds were females, and that many of those with white throats were males. In more than one instance a **white-throated** bird in fine freshly moulted plumage proved to be a male, and was shot in company with a female which had a partially black throat. More than one female was procured with the throat quite, or almost, as black as that of the full-plumaged male. It would thus appear that some males, probably birds of the year, do not assume the black throat at their first breeding season; while certain females, probably very old birds, have a black throat like the old male.

We found a nest of this bird containing four hard-set eggs on San Jorge on May 10th, and only one of the eggs could be successfully blown. A second nest with four slightly incubated eggs was subsequently taken on May 25th

below the Caldeira of Fayal. The eggs are whitish with indistinct suffused markings of pale grey and very pale yellowish-brown; one of the clutch of four from Fayal is of a more reddish-brown tint.

Clutches procured by Mr. F. D. Godman on San Miguel and Terceira are equally pale and devoid of very definite markings. The eggs measure 0.75 by 0.6—0.61 in.

The “Labandeira,” or “Arvelinha,” as this bird is called in the Azores, is regarded with superstitious dread by the natives, and we were informed that any boy who was caught killing one was severely punished by his parents.]

108. [*Motacilla alba* L.

The Ponta Delgada Museum contains :

a. Ponta Delgada, San Miguel.

Major Chaves informs us that the above example is the only White Wagtail known to have occurred in the Azores.]

109. *Alauda arvensis cantarella* Bp.

Alauda cantarella Bonaparte, *Iconogr. Fauna Ital., Uccelli*, Introd. p. 5 (1841—Italy).

[Specimen in the Ponta Delgada Museum :

a. Flores, May 1904.

This is the first time that a Skylark has been known to occur in the Azores.]

110. *Passerina nivalis* (L.).

Emberiza nivalis Linnaeus, *Syst. Nat.*, ed. x, p. 176 (1758 : “Hab. in alpinis Lapponiae,” etc.).

It is somewhat unexpected to find this northern bird in the Azores; but Mr. Grant obtained a female at Sete Cidades on San Miguel on March 27th, 1903, and he found several specimens in the Ponta Delgada Museum, which were obtained near that town, partly in freshly-moulted autumn plumage, partly in worn spring dress, with only a few whitish edges to the black feathers of the back.

[Local name : Caiado.

Specimens in the Ponta Delgada Museum :

a. Ponta Delgada, San Miguel.

b. Ribeira Grande, „ „

c. Lagôa, „ „

Two specimens of the Snow-Bunting from Ponta Delgada were presented to the British Museum.

We obtained a female at Sete Cidades, at the west end of San Miguel, on March 27th.

Major Chaves informed us that this species was reported to breed on the high ground, but that personally he was inclined to disbelieve this statement; all the birds we have examined from the Azores were killed not later than the end of March or beginning of April.]

111. *Fringilla coelebs moreletti* Puch.

Fringilla Moreletti Pucheran, *Rev. et Mag. de Zool.*, 1859, pp. 409-12, pl. 116 (Azores).

Similar to *F. c. maderensis*, but differs in having less white on the lateral rectrices. Among the grand series collected by Mr. Grant there are only five

or six which approach *maderensis* in the extent of the white colour on the rectrices, and two which are quite similar. The back is more uniform olive-greenish, not showing such a distinct olive-brown saddle in the middle of the back; the abdomen is more whitish, and lacks the vinous tinge; the breast is generally somewhat more brownish. The bill is sometimes much, generally a little, larger.

Mr. Grant collected the following series:

11 ♂♂, 8 ♀♀, Santa Maria, 300—1000 ft., end of February and beginning of March.

28 ♂♂, 18 ♀♀, San Miguel, March 1903.

17 ♂♂, 6 ♀♀, Terceira, 1000—2000 ft., end of March and beginning of April.

11 ♂♂, 5 ♀♀, Graciosa, 21—24. iv. 1903.

15 ♂♂, 4 ♀♀, San Jorge, 1200—2000 ft., beginning of May.

14 ♂♂, 5 ♀♀, Pico, 800—2000 ft., second half of May.

10 ♂♂, 5 ♀♀, Fayal, 1000—3500 ft., April 13th and end of May.

15 ♂♂, 5 ♀♀, Flores, 400—1000 ft., 15—19. iv. 1903.

4 ♂♂, 1 ♀, Corvo, 500 ft., 14. iv. 1903.

♂ ad. "Iris brown (dark brown); bill horn-blue (bluish-horn), tip and edges black (deep brown); legs and feet dark brown (very dark brown, dull brown)."

[Local name: Tentilhão.

The Ponta Delgada Museum contains:

a, b. Ponta Delgada, San Miguel.]

The Chaffinch is far the commonest bird in the Azores, and found in every island from the sea coast to the very highest ground, its numbers gradually diminishing as the higher altitudes are reached, and as a rule only the oldest and most brilliantly coloured birds are to be seen there.

Though common enough on Graciosa, this species was not nearly so numerous there as on the other islands. On newly ploughed land enormous flocks were to be seen, and as a rule the birds were remarkably tame.

The double, triple, or quadruple call-note *chi-chi-chi-chi* is something like that of the Madeira bird (*F. maderensis*), but distinctly louder and less musical, and the song is harsher and sung in a lower key. Another note, less frequently heard, and apparently uttered when the birds are uneasy or alarmed, is singularly like the call-note of the Bullfinch. When first heard on Terceira, where no Bullfinch was known to exist, it caused great excitement, but a long chase over a bush-clad hillside resulted in the death of a male Chaffinch and put an end to our hopes. The first nest was found on April 25th, on the side of the Caldeira of Graciosa. It was placed in the fork of a small faya-bush three feet from the ground, and, being only partially finished, I had an opportunity of watching the female at work on the lining. During the first week in May we found a number of nests on the top of San Jorge, placed in the tall clumps of heath from four to six feet from the ground. When first found, on May 2nd, some of the nests appeared to be quite finished and ready for eggs, and the birds showed great anxiety at our approach. Mr. Harwood and I revisited these nests ten days later, just before leaving the island, but did not find a single egg. We met with similar bad luck both on Pico and Fayal, and though some of the females shot on the latter island in the end of May were evidently breeding, we were never fortunate enough to find a nest with eggs.

The plumage of this species is very puzzling, and appears to vary considerably

in different individuals of the same sex and age. As it was at first thought this variation might be due to locality, a large series was collected from every island, but we satisfied ourselves that only one somewhat variable form exists. The adult male birds have the top of the head blue and the back green or blue-green, but some males, probably birds of the year, but with the testes much enlarged, have the back brownish. The amount of white in the outer tail-feathers also varies greatly: most birds have the two outer pairs of tail-feathers partially white, but some individuals have the outer tail-feathers uniform black, and intermediate forms are met with. Lastly, in one or two of the finest adult males procured, the rufous pink of the chest and breast is sharply defined from the belly, which is pure white.

The males of this species may generally be distinguished from the Madeiran ally by having a much larger bill, a well-defined light eyebrow stripe, a dark spot behind the eye and much less white on the outer tail-feathers.]

112. *Serinus canaria canaria* (L.).

Fringilla Canaria, Linnaeus, *Syst. Nat.* ed. x. p. 181 (1758—"Hab. in Canariis insulis." Description of the yellow cage-variety).

6 ♂♂, 4 ♀♀, Santa Maria, 400 ft., 28. ii., 1. iii. 1903.

8 ♂♂, 5 ♀♀, San Miguel, 300—800 ft., 6—25. iii. 1903.

6 ♂♂, 6 ♀♀, Terceira, 1200—2000 ft., 28. iii. to 5. iv. 1903.

5 ♂♂, 5 ♀♀, Graciosa, 200 ft., 21—24. iv. 1903.

2 ♂♂, 2 ♀♀, San Jorge, 1200 ft., 4. 6. v. 1903.

3 ♂♂, 3 ♀♀, Pico, 1000 ft., 13, 17. v. 1903.

2 ♂♂, 2 ♀♀, Fayal, 2000 ft., 25, 27. v. 1903.

1 ♂, 1 ♀, Flores, 1000 ft., 15. iv. 1903.

"Iris brown: bill: upper mandible dusky horn, under mandible pale horn: legs light brown (horn-colour)."

[Local name: Canario.

The Ponta Delgada Museum contains:

a—c. Ponta Delgada, San Miguel.

On the eastern and central islands of the group the Canary is more or less common, but on Flores it is very thinly distributed, being only met with in small scattered lots, and during our brief visit to Corvo only one individual was seen.

The gardens and fields on the lower parts of the islands are its favourite resorts, and flocks may often be seen feeding on the grassy flats near the sea, while scattered pairs are also met with during the day on the high heath-clad hills. They are bright, lively birds, always on the move, the males constantly chasing one another or their mates, and singing their delightful varied song both when at rest and on the wing. With greatly distended throat and measured emphatic beats of the wings they pass like Larks slowly overhead, singing with all their might, and so puffed up with self-importance that they appear nearly twice their normal size. The breeding-season commences early, and on March 20th we noticed a pair building their nest in a garden at Ponta Delgada. Young were found on April 17th and 26th at Flores and Graciosa respectively, and numerous clutches of eggs, some fresh and some much incubated, as well as young just able to fly, were procured at Pico in the middle of May. Three appears to be the usual complement of eggs, but some nests contained four.

The neatly constructed nest of moss, etc., lined with feathers and hair, is

generally placed at a height of from ten to twenty feet from the ground, and well concealed among the foliage of some orange tree or faya; but on the top of Villa Islet, off Santa Maria, we found several pairs breeding in the scrubby growth within a few inches of the ground.

The eggs vary considerably, the ground colour being either pale greenish-white or white tinged with rufous. In some specimens the markings consist of small blotches, scribbings and irregular wavy lines with paler underlying cloudy markings of purplish-brown; others are irregularly covered with small spots and blotches of pale purplish-red or indistinct small markings and spots of light red, while in yet another type the markings are scarcely perceptible. The measurements vary from 0.66—0.76 $\times$ 0.47—0.55 in.]

113. *Acanthis carduelis parva* (Tsch.).

Carduelis carduelis parva Tschusi, *Orn. Monatsber.* 1901, p. 129 ("südliche Form" typ. loc. Madeira!)

3 ♀♀, San Miguel, 24, 26. iii. 1903.

5 ♂♂, 4 ♀♀, Terceira, 3—6. iv. 1903.

"Iris brown; bill whitish horn, dark at tip; legs light horn-brown."

Said to have been introduced to the Azores. If this is proved, it must have come from Madeira, as the form inhabiting the Iberian Peninsula is not *parva* (cf. *Vög. pal. Fauna* p. 69, Nos. 109, 110).

[Local name: Pintasilgo.

The Ponta Delgada Museum contains:

a, b. ad., Ponta Delgada, San Miguel.

Carduelis carduelis $\times$ *Scirius canarius*.

a. ad., Ponta Delgada, San Miguel.

The Goldfinch is fairly common on San Miguel in the neighbourhood of Ponta Delgada and in the Reguinho district of Terceira, above the town of Angra. According to Major Chaves the species has been introduced by the liberation of birds brought from Madeira.

I found two nests in the garden of the Quinta da Nasce Agua at Reguinho in the beginning of April, one situated in a faya-tree and the other on the branch of a pine, but neither of them contained any eggs up to the date of our leaving the island on April 10th.]

114. *Pyrrhula pyrrhula murina* Godm.

Pyrrhula murina Godman, *Ibis* 1866, p. 97, pl. vii. (San Miguel).

10 ♂♀ skins, 2 ♂♀ in spirits, near Furnas, San Miguel, 17, 25. iii., and April 1903. "Iris brown, bill black; legs brown, or very dark horn-brown."

[Local name: Priôlo.

Specimens in the Ponta Delgada Museum:

a, b. ad. Furnas, San Miguel.

This Bullfinch, by far the most interesting bird met with in the Azores, though plentiful enough when first discovered by Mr. Godman, is now very scarce, and its extermination is probably only a matter of a few years. Its range was apparently always a very restricted one, being limited to the eastern portion of San Miguel, where it frequents certain wooded banks to the north of Furnas and about

Pavão. Major Chaves informed us that formerly he had sent many skins of this bird to the various museums in Europe, but that of late years he had been unable to procure any more specimens, and he feared that we were hardly likely to be successful in our quest.

During our visit to Furnas we therefore worked very hard to obtain specimens, and procured the assistance of a local gunner to show us the ground where the Bullfinch was known to occur. Our first day with him resulted in nothing; but late in the afternoon of the following day, after again traversing all the steep banks covered with tall pine trees and faya, Mr. Harwood and I heard a note, which could only be that of the bird we were looking for. An imitation of the call was



The home of the Bullfinch. Above the lake of Furnas,
San Miguel.

at once returned, and in a few seconds a pair settled in a pine tree over our heads, and were bagged without any difficulty. In the flesh the male looked considerably larger than the female; the latter had the ovary well developed, and would probably have begun to lay in a few days. We subsequently, with the help of local aid, procured a small series of skins, but our efforts to find a nest were not successful. Curiously enough, the eggs appear to be unknown, and Major Chaves has never been able to procure a set for the Ponta Delgada Museum.

According to local information this Bullfinch is always met with in pairs, and our limited experience indicates that this statement is correct. Though once very common, its raids on the flowers of the peach trees have caused its wholesale slaughter by the natives. Senhor Jeronymo, of the Hotel in Furnas, told us that he could remember the time when it was no uncommon sight to see twenty or more

of these birds at one time on a peach tree; and he said that the local gunners, who all know the "Priôlo" well, attribute their rapid disappearance to some disease, which killed them off, rather than to the shooting of them. However this may be, the fact remains that this very local bird must soon disappear, and, as there seemed no chance of saving them from the fruit-farmer, we felt no compunction in securing such specimens as we met with.]

115. *Chloris chloris aurantiiventris* (Cab.)

Ligurinus aurantiiventris Cabanis *Mus. Hein.* i. p. 158 (1850 : South France).

7 ♂♂, 2 ♀♀, San Miguel, near Ponta Delgada.

Introduced, probably from Portugal.

[Local name : Verdilhão.

Specimens in the Ponta Delgada Museum :

a, b. Ponta Delgada, San Miguel.

This species was only met with on San Miguel in the neighbourhood of Ponta Delgada, where we found it fairly common in some of the larger gardens.

Major Chaves informed us that it had been introduced comparatively recently, and that he believed the original stock had been brought from Portugal.]

116. [*Petronia petronia* (L.).

The Ponta Delgada Museum contains :

a. ad. Lagoa, San Miguel.

According to Major Chaves the Rock-Sparrow is a very rare straggler to the Azores.]

117. *Oriolus oriolus* (L.).

Coracias oriolus Linnaeus, *Syst. Nat.* ed. x. p. 107 (1758 "Hab. in Europa, Asia." Typical locality, Sweden).

[The Ponta Delgada Museum contains :

a. ad. Ribeira Grande, San Miguel.

A male killed at Ginetes, San Miguel, was presented to the British Museum.

Major Chaves informs us that the Golden Oriole is a rare straggler to the Azores.]

118. *Sturnus vulgaris granti* Hart.

Sturnus vulgaris granti Hartert, *Vog. pul. Fauna*, p. 43 (1903—Azores. Type ♂ No. 446, Graciosa).

Very similar to *S. vulgaris vulgaris*, but the first primary still more reduced, about 2 mm. shorter. The bill is less wide, often very short, and generally smaller. The legs have the tendency to be small. Colours as in our Starling.

1 ♀, Santa Maria, 300 ft., 27. ii. 1903.

2 ♂♂, 3 ♀♀, San Miguel, 300 ft., 9, 10. iii. 1903.

1 ♂, 1 ♀, Terceira, 1200 ft., 9. iv. 1903.

2 ♂♂, Graciosa, 22. iv. 1903.

1 ♂, 2 ♀♀, San Jorge, 1200 ft., 9. v. 1903.

1 ♂, 2 ♀♀, Pico, 1000 ft., 21. v. 1903.

1 ♀, Fayal, 1000 ft., 26. v. 1903.

2 ♂♂, Flores, 500 ft., 17. iv. 1903.

1 ♂, Corvo, 500 ft., 14. iv. 1903.

"Iris brown, bill yellow, legs light reddish brown."

[Local name : Estorninho.

Specimens in the Ponta Delgada Museum :

a. c. Ponta Delgada, San Miguel.

d. (albino) Flores.]

[The Starling is a fairly common bird throughout the whole group, especially on the lower cultivated ground, but above an elevation of about 2000 ft. it was rarely seen. Its habits did not appear to differ in any respect from those of the English bird, but some of the notes, or rather noises, made by the males were very remarkably different from any we had ever heard uttered by *S. vulgaris*. One call especially was most extraordinary, being a prolonged high-pitched rattle, impossible to describe. We could not guess what sounds the bird was trying to imitate ; probably it is one of the natural calls. Their nest is, as usual, placed in very varied positions. On Corvo numbers of birds were breeding in April in the low loose stone walls surrounding the fields ; but on Villa Islet, off the coast of Santa Maria, on June 1st, we found many nests placed on the ground under heaps of loose stones, and containing fresh eggs or young birds, four to five in number. The eggs resemble those of the Common Starling.]

119. [**Corvus corone** L.

Corvus corax Simroth, *Arch. f. Naturg.* i. p. 189 (1888).

The Ponta Delgada Museum contains :

a. ad. Arrifes, near Ponta Delgada, San Miguel.

The Carrion Crow occurs as a rare visitor to the Azores.]

120. **Corvus frugilegus** L.

[The Ponta Delgada Museum contains :

a. ad. Ponta Delgada, San Miguel.

Major Chaves says that the Rook occasionally appears in flocks.]

[Since the above was set up Major F. A. Chaves has forwarded for identification two examples of No. 46 (p. 105), *Tringa maritima*, from San Miguel, as well as the following species, which is new to the Azores :

121. (46A.) **Tringa fuscicollis** Vieill.

a. ♂ imm. San Miguel 31. x. 1904.]

NEUE AETHIOPISCHE RHOPALOCERA DES KGL. MUSEUMS FÜR NATURKUNDE IN BERLIN.

VON MAX BARTEL.

DURCH den Direktor des Kgl. Museums für Naturkunde in Berlin, Herrn Geheimrat Prof. Dr. Möbius, ist es mir in liebenswürdigster Weise gestattet worden, die in der Museumssammlung zahlreich vorhandenen neuen Tagfalter zu beschreiben. Ich beschränke mich im nachfolgenden nicht auf die Kenntlichmachung der neuen Arten und Formen, sondern bringe auch hier und da Notizen über die Variabilität und Verbreitung wenig bekannter Arten und in wenigen Fällen auch die Feststellung der Synonymie verkannter Formen. Da es mein grösstes Bestreben war, die neuen Arten mit den nächsten bekannten Verwandten derselben zu vergleichen und die Unterschiede von denselben genau anzugeben, wird eine Ergänzung der Aurivillius'schen Übersichten der Arten überflüssig sein. Die Reihenfolge und Nomenklatur der Gattungen ist die der Aurivillius'schen *Rhopalocera aethiopica*; kleine Abweichungen wurden auf Grund der neuesten Arbeit von Dr. Walter Rothschild und Dr. K. Jordan ("Lepidoptera collected by Oscar Neumann in North-East Africa," in *Noctitates Zoologicae*, vol. x. 1903, pp. 491—542) angenommen. Bei einzelnen Arten musste ich auf das letzte Heft der *Deutsch. Ent. Zeitschr. Iris* (Dresden, Bd. xvii. Heft i. 1904) zurückgreifen, in dem Herr Suffert eine grosse Anzahl von neuen afrikanischen Lepidopteren benannt hat. Es ist hier nicht der Ort, nachzuprüfen, welche von den beschriebenen Tieren wirklich neu sind; ich kann aber nicht umhin, meine grösste Verwunderung auszudrücken, dass in der *Iris* eine Arbeit aufgenommen werden konnte mit einer so kuriosen Namengebung, wie sie in der gesamten entomologischen Litteratur wohl einzig dasteht—es finden sich nämlich neben einer Unzahl völlig sinnloser Namen auch solche, die nach namhaften—Komponisten gebildet worden sind. Nicht besonders auffällig kann es unter diesen Umständen auch sein, dass Herrn Suffert's Nomenklaturgesetze über jeden Zweifel erhaben sind; es werden da alle Formen, gleichwie ob aberrative oder dimorphe, ausnahmslos als Subspezies aufgeführt.

DANAIDAE.

1. *Amauris hecate* Butl. ♀-f. *reducta* nov.

♀. Von der Färbung des ♂. Weisse Färbung im Basalfelde der Hinterflügel eingeschränkt, wie beim ♂, auf der Unterseite noch geringer als dort.

Flügelspannung: 77 mm.; Vorderflügelänge: 43 mm. (♀).

Kamerun (Victoria, von Preuss).

SATYRIDAE.

2. *Elymnias phegea* F. ab. *angustata* nov.

♀. Schrägbinde der Vorderflügel schmaler als gewöhnlich, heller, gelblich angeflogen. Der grosse braune Innenrandteil ist auf einen mässig grossen

Fleck unter dem unteren Teile der Schrägbinde reduziert. Braune Färbung auf den Hinterflügeln gleichfalls sehr eingeschränkt, im oberen Teile tritt sie fleck- oder bindenartig auf, der untere breite Innenrandteil ist braun besprenkelt. Unterseite mit ähnlichen Merkmalen wie die Oberseite.

Flügelspannung: 77 mm.; Vorderflügelänge: 42 mm. (♀).

Kamerun (Barombi Station, von Preuss).

3. *Melanitis libya nyassae* nov. subsp.

Aussenrand der Vorderflügel auf Ader 5 abgestumpft, wie bei gewissen *M. leda* L. Oberseite der Flügel schmutzig grau, nicht braungrau. Der breite schwarze Apikalwisch der Vorderflügel ist sehr eingeschränkt, kaum wahrnehmbar. Die weissen Flecke sind um $\frac{2}{3}$ kleiner als gewöhnlich, beim ♀ etwas grösser als beim ♂, schwach blau angeflogen. Unterseite ganz zeichnungslos, beim ♂ dicht grau besprenkelt, beim ♀ am Vorder- und Aussenrande gelb, am Vorderrande (Vorderwinkel) sehr ausgedehnt. Im Aussenfelde stehen kleine weisse Punktflecken.

Flügelspannung: ♂ 61, ♀ 68 mm.; Vorderflügelänge: 33, bzw. 36 mm.

N. Nyassa-See (Langenburg, ♂ am 2. Januar 1900, von Fülleborn).

4. *Gnophodes chelys* F. ♀-f. *iris* nov.

Nähert sich der Stammform mehr als der ab. *harpa* Karsch, da der Apikalfleck der Vorderflügel weiss ist. Die ganze Flügelfläche wird mit Ausnahme des Randes von violettblauem Schiller eingenommen, der typischen ♀ völlig fehlt.

Flügelspannung: 78; Vorderflügelänge: 38 mm. (♀).

Kamerun (Hinterland, Jaunde-Station, von Zenker).

5. *Mycalesis* (subg. *Bicyclus*) *bicolor* nov. spec.

Ganz nahe der *M. hewitsoni* Doumet stehend, und mit ähnlicher aber etwas lichter Grundfarbe. Die Schrägbinde der Vorderflügel ist licht blau, ins violette ziehend, nach aussen breit weiss angelegt. Sie ist viel breiter als bei der genannten Art und zeigt auch einen ganz anderen Verlauf, da sie sich vom Zellenschlusse etwas entfernt und viel weiter auswärts am Vorderrande endigt. Der Raum hinter dieser Binde ist nicht dunkelgrau, sondern lichtgrau angelegt; in ihm stehen über Ader 4 drei schwarze Pünktchen. Hinterflügel ähnlich wie bei *M. hewitsoni*; das Blau längs des Aussenrandes zeigt denselben Ton wie auf den Vorderflügeln: nach unten zu ist es verschmälert, nach oben geht es mehr in die Grundfarbe über. Ganz abweichend ist auch der Verlauf der Begrenzung des dunklen Basalteiles der Vorderflügel auf der Unterseite; er ist bogenförmig, während er bei *M. hewitsoni* gerade verläuft. Das Aussenfeld ist fast ganz weisslich, schwach bläulich schillernd, am Rande und im inneren, unteren Teile lichtgrau gemischt. Der grosse Augenfleck in Zelle 2 fehlt ganz; in Zelle 6 ist ein kleiner Augenfleck, und darunter ein winzig kleiner vorhanden. Auch die Wellenlinie fehlt auf den Vorderflügeln ganz, während sie auf den Hinterflügeln schwach angedeutet ist. Diese sind sonst denen der genannten Art ähnlich. Die dunkle Mittellinie ist ganz gerade, nicht gewellt. Äussere Flügelhälfte einförmiger, am Vorderrande und im

oberen Teile des Aussenrandes weisslich. Die Augenflecke sind bedeutend kleiner, die in den Zellen 3 bis 5 nur angedeutet. Palpen lichter. Durch die verschieden verlaufende, zweifarbige, breitere Schrägbinde der Vorderflügel, die gebogene Linie hinter der Mitte derselben unterseits, das weissliche Aussenfeld, den Mangel des grossen Augenfleckes in Zelle 2 etc. wird diese Art leicht von *M. hewitsoni* getrennt.

Flügelspannung: 57 mm.; Vorderflügelänge: 31 mm. (♂).

Kamerun (Hinterland, Jaunde-Stat., von Zenker).

6. *Mycalesis* (subg. *Bicyclus*) *subocellatus* nov. spec.

Flügel oberseits ähnlich wie bei *M. hewitsoni* Doumet, doch ist die Form der Flügel eine breitere und kürzere. Blane Binde der Vorderflügel gerade (nicht gebogen) verlaufend, breiter, besonders nach oben, nach aussen weisslich gemischt. Augenflecke oder dunkle Punkte sind auf den Vorderflügeln nicht vorhanden. Der Aussenrand ist etwas geschweift. Blau der Hinterflügel im oberen Teile ausgedehnter. Auf der Unterseite der Vorderflügel verläuft die dunkle Begrenzung des inneren Flügelteiles gerade. Aussenfeld weisslichgrau, violett schillernd, ähnlich wie bei der vorbeschriebenen Art. Zelle 6 mit kleinem weissen, licht braungrau umzogenen Fleckchen, Zelle 2 mit etwas grösserem, noch weiss umgürtetem. Hinterflügelmittellinie gerade verlaufend, auswärts breiter licht begrenzt als bei den beiden verwandten Arten. Zelle 6 nahe des Vorderrandes mit grösserem dunklen, weiss gekernten Augenflecke; derselbe ist gelblich, dann braungrau umgürtet und steht in einem licht bläulichen Ringe. Ihm folgen nach unten 4 weisse, braun umrandete Punktflecke, von denen der oberste deutlich weiss gekernt ist. Vor dem Innenwinkel stehen vier kleine schwarze, weiss gekernte und gelbgerandete Augenflecke. Die lichte Beschuppung am Vorderwinkel weniger ausgedehnt; sonst der vorbeschriebenen Art ähnlich. Diese neue Art unterscheidet sich von *M. hewitsoni* durch die breitere blane, auswärts weisslich gemischte, verschieden verlaufende Binde der Vorderflügel, den Mangel jeglicher Augenpunkte oder Flecke auf der Oberseite, die sehr kleinen Augenfleckchen auf der Unterseite derselben, ferner durch die Augenflecke der Hinterflügel, deren oberer, ebenso wie die beiden Analflecke sehr klein sind, während die übrigen nur in der Form weisser Punkte auftreten, auch in Zelle 2, wo bei den verwandten Arten ein überaus grosser schwarzer Augenfleck vorhanden ist. Von *M. bicolor* wird sie durch dieselben Merkmale getrennt; diese Art ist dann noch durch die zweifarbige Binde der Vorderflügeloberseite, unten durch die gebogene Mittellinie, sowie den Mangel des Augenfleckes in Zelle 2 der Vorderflügel ausgezeichnet.

Flügelspannung: 57 mm.; Vorderflügelänge: 30 mm. (♂).

Central-Afrika (6° s. Br., 22—26° ö. L. v. Gr., von P. Pogge, 9. Januar).

7. *M.* (subg. *Bicyclus*) *iccius* Hew. ab. *transiens* nov.

Die blane Binde der Vorderflügel ist fast um die Hälfte schmaler als bei typischen Exemplaren, erreicht jedoch noch Ader 1. Auf der Unterseite der Flügel sind alle Augenflecke gleichmässig, sehr klein, keiner von ihnen ist schwarz.

Flügelspannung: 60 mm.; Vorderflügelänge: 33 mm. (♂).

Kamerun (Hinterland, Jaunde-Station, von Zenker).

8. *Mycalesis dubia* Aur.

Das ♂ dieser Art ist oben einfarbig dunkel, ohne Zeichnung, nach dem Rande etwas aufgehellt. Hinterflügel ohne Sammetfleck und ohne Pinsel in Zelle 1 v. Ader 7 derselben entspringt etwas näher an 6 als an 8. Innenrand der Vorderflügel ohne lange Behaarung. Die Unterseite ist eintöniger als beim ♀, sehr dunkel, besonders auf den Hinterflügeln, die fast einfarbig erscheinen. Das dunkle Mittelfeld der Vorderflügel auswärts nicht so stark zapfenartig vordringend. Vorderrand nicht hell beschuppt; nur ein kleiner lichter Fleck zwischen den beiden Augenflecken der Vorderflügel ist vorhanden. Mittelteil der Hinterflügel nicht scharf begrenzt. Anzahl der Augenflecke wie beim ♀, doch sind dieselben sehr düster und auf den Hinterflügeln wesentlich kleiner.

Flügelspannung: 40 mm.; Vorderflügelänge: 18 mm. (♂).

Quimbundo (von Pogge).

9. *M. asochis* Hew.

Ein ♀ des Berliner Museums weicht dadurch ab, dass der Augenfleck in Zelle 3 der Hinterflügelunterseite fehlt.

10. *M.* (subg. *Monotrichtis*) *madates* Hew.

Ein ♂ aus Kamerun (Barombi-Stat. beim Elef.-See von Zeuner) weicht von Togo ♂ dadurch ab, dass es oberseits viel dunkler gefärbt ist, aber auch unterseits durch sehr düsteres Aussehen sich auszeichnet.

Flügelspannung: 39 mm.; Vorderflügelänge: 18 mm.

11. *M.* (subg. *Monotrichtis*) *dorothea* Cr.

Diese Art hat doch entgegen der Angabe Aurivillius (*Rhop. Aeth.* p. 52. n. 33) einen Haarpinsel in Zelle 6 der Hinterflügel; derselbe ist aber dünner als bei den ♂ anderer Arten.

12. *M.* (subg. *Monotrichtis*) *ploetzi* nov. spec.

M. rhanidostruma Aur. (non Karsch), *Ent. Tidskr.* 14. p. 267 (1893); id., *Rhop. Aeth.* p. 52. no. 35 (1898).

Die schon durch das Citat kenntlich gemachte Art kann nicht mit *M. sophrosyne* Plötz identisch sein, da die Beschreibung dieser letzteren in keiner Hinsicht sich darauf anwenden lässt, z. B. kommen folgende von Plötz hervorgehobene Merkmale bei ihr nicht vor: "das vor dem Saume aller Flügel ziehende, matte Band, auf den Vorderflügeln steht vor der Spitze ein kurzes mattes Querband, an dessen Enden in Zelle 2 ein dunkler Augenfleck steht. Die Saumbälfte der Flügel hat unterseits mit dem Saume gleichlaufend eine Reihe lichter runder Flecke, ferner (mit Ausnahme der Zellen 1 und 6 der Hinter- und 5 der Vorderflügel) zum Teil in den Zellen hellbraune Ringe." Ferner erwähnt Plötz nichts von dem für diese Art sehr charakteristischen überaus grossen schwarzen Wische der Vorderflügel des ♂, durch den die Art der *M. istaris* Plötz nahe kommt. Sie unterscheidet sich ausser diesem (von Aurivillius bereits hervorgehobenen) Merkmale in folgenden Punkten: Der kleine Augenfleck in Zelle 5 der Vorderflügel fehlt. Saumlinie der Hinterflügel kaum wahrnehmbar; durch den

abweichenden Verlauf der Begrenzung des dunklen Innenteiles der Vorderflügelunterseite, die verschiedene Färbung der Aussenfelder und die in Zahl und Grösse sehr verschiedenen Augenflecke derselben. Die Begrenzung der dunklen Färbung ist auf den Vorderflügeln stark gebogen, auf den Hinterflügeln nicht gerade abgeschnitten, sondern unregelmässig, im oberen Teile wurzelwärts gezackt. Aussenfeld viel dunkler, nach innen nicht so licht begrenzt. Augenfleck der Zelle 2 der Vorderflügel überaus gross, schwarz, stark weiss gekernt und breit gelb gerandet. Nahe der Flügelspitze beider Flügel stehen zwei kleine gleichfarbige Augenflecke; ihnen folgen auf den Hinterflügeln nach unten zwei kleine gelbe Pünktchen. Zelle 2 der Hinterflügel ebenfalls mit sehr grossem Augenfleck; am Analwinkel treten zwei kleinere auf.

Flügelspannung: 42 mm.; Vorderflügelänge: 22 mm. (♂).

N.-Kamerun (Johann-Albrechtshöhe, 21. April 1896, von L. Conradt).

13. *M. (subg. Monotrichtis) fuelleborni* nov. spec.

Nahe verwandt mit *M. danckelmanni* Rgh., doch in folgenden Punkten von derselben verschieden: Aussenteil der Vorderflügel nicht so stark aufgehell, mit kleineren, ungekernten und daher wenig hervortretenden Augenflecken. Das dunkle Mittelteil nicht so scharf abgeschnitten, nach unten gerade verlaufend. Auf den Hinterflügeln hebt sich die Begrenzung des Innenteiles nur sehr schwach von dem wenig helleren Aussenteil ab. Der Haarpinsel am Vorderrande der Mittelzelle ist schwächer und nicht gelb, sondern rauchbraun gefärbt, der Pinsel der Zelle 6 ist hingegen wesentlich stärker, von schwarzer, nicht gelbbraunlicher Farbe. Ader 1 der Vorderflügel mit länglichem lichten Mehlfleck in der Mitte (bei *M. danckelmanni* sind 2 kleinere Mehlflecke bei $\frac{1}{3}$ und vor $\frac{2}{3}$ der Länge von Ader 1 vorhanden). Auf der ähnlich gezeichneten Unterseite weicht der dunkle, schwarzbraune Innenteil dadurch ab, dass der Vorderrand der Vorderflügel grau besprenkelt ist; die Mittelzelle derselben wird von einem grauen Streifen in der Mitte durchquert. Basal- und Innenrandteil der Hinterflügel gleichfalls grau bestäubt, am intensivsten der letztere. Ersterer mit einer undeutlichen lichtgrauen Fleckenreihe. Die äussere Begrenzung des dunklen Teiles dringt nach oben bauchig vor. Aussenteil violettgrau, gelb gemischt und grau besprenkelt. Der Augenfleck der Zelle 2 der Vorderflügel ist braun (nicht gelb) umgürtet; an Stelle des oberen Fleckes steht nur ein weisser Punkt. Submarginallinie sehr undeutlich, nicht gezackt; auf den Hinterflügeln ist sie deutlich, aber schwächer gezackt als bei *M. danckelmanni*. Hier sind nur die drei unteren Augenflecke deutlich; sie sind schwarz, schwach weiss gekernt und gelblich geringelt; sie sind aber sehr klein; alle übrigen Augenflecke werden nur durch weisse Punkte vertreten, von denen der oberste braun umgürtet ist.

Flügelspannung: 45 mm.; Vorderflügelänge: 21 mm. (♂).

N. Nyassa-See (Langenburg, Wangermannshöhe, Anfang August 1899, von Dr. F. Fülleborn).

14. *Pseudonympha cassius* God. ab. *tricellata* nov.

Wie *P. cassius* God., Hinterflügel jedoch mit 3 Augenflecken in den Zellen 2—4.

Flügelspannung: 37 mm.; Vorderflügelänge: 18 mm. (♂, ♀).

Natal (Marburg, von Bachmann).

15. *Ypthima albida argentata* nov. subsp.

Y. albida Sharpe, *Pr. Zool. S. Lond.* 1894. p. 336. t. 19. f. 4.

Eine überaus interessante Form der sonderbaren *Y. albida* Butl. und wie diese von silberweisser Grundfarbe der Flügel. Während dort die Vorderflügel fast ganz ungezeichnet sind und nur einen partiellen Apikalaugenfleck haben, führen sie bei der *albida argentata* ein sehr grosses schwarzes, doppelt blau-gekerntes Apikalauge, etwa wie bei *Y. doleta* Kirby. Dasselbe ist jedoch schmaler gelb umzogen; Aussenring schmal, schwärzlich. Aussenrand breit schwärzlich beschuppt, besonders im Apikalteile; im unteren Teile von lichten Schuppen geteilt, nahe des Innenrandes verloschen werdend. Zwischen dem Rande und dem Apikalauge ist düstere Beschuppung in die Grundfarbe eingestreut. Vorder- und der Vorderflügel, Aussenrand der hinteren, sowie Basis beider Flügel dunkel besprenkelt. Hinterflügel mit ziemlich grossem Augenfleck in Zelle 2; derselbe stimmt in der Färbung mit dem der Vorderflügel überein, ist aber nur undeutlich gekernt. Nahe des Analwinkels steht noch ein ganz kleiner, undeutlicher Augenfleck. Unterseite der von *Y. albida albida* Butl. sehr ähnlich, jedoch etwas lichter; die weissen Schuppen stellenweise sehr angehäuft. Hinterflügel unten mit deutlicher, breiter, dunkler Mittelbinde.

Flügelspannung: 35 mm.; Vorderflügelänge: 18 mm. (1 ♂).

Tanganyika-See (Niarugengi Ruanda, 12. März 1898, von Hösemann).

16. *Y. albida occidentalis* nov. subsp.

Wie vorige Form, Grundfarbe jedoch mehr ins Blaue ziehend. Aussenrand der Vorderflügel nicht deutlich schwarz abgeschnitten. Die Grundfärbung erscheint etwas schmutzig, so dass diese Form die dunkelste aller *Y. albida*-Rassen sein dürfte. Auf den Hinterflügeln ist noch in Zelle 3 ein kleiner Augenfleck vorhanden. Unterseite mit drei doppelt bis dreimal grösseren Augenflecken als bei *albida argentata*. Das ♀ (das bei den anderen Formen noch unbekannt ist) unterscheidet sich vom ♂ dadurch, dass die Grundfarbe weisslich, sehr stark durch dunkle Atome verdüstert ist. Die gelbe Umrandung des Augenfleckes ist breiter als beim ♂; sonst ist das ♀ dem ♂ sehr ähnlich. Unterseite der Flügel stark gelb bestreut.

Flügelspannung: ♂ 38, ♀ 36 mm.; Vorderflügelänge: 19 bzw. 18 mm.

N.-Kamerun (Bangwe, 1000 m., Mitte Juni—Juli 1899, von G. Conrad gesammelt).

17. *Y. albida uniformis* nov. subsp.

Von allen Formen der *Y. albida* Butl. dadurch verschieden, dass der grosse Augenfleck der Vorderflügel vollständig fehlt. Die ganze Flügelfläche ist silberweiss; nur der basale Teil des Vorderrandes und ein überaus schmaler Apikal-(Aussenrands)-Teil der Vorderflügel, ferner der Innenrand der Hinterflügel sind dunkel bestäubt. Hinterflügel nur mit einem winzig kleinen Auge in Zelle 2. Unterseite der von *albida argentata* ganz ähnlich. Mittelbinde der Hinterflügel jedoch nicht so deutlich hervortretend wie dort.

Flügelspannung: 40 mm.; Vorderflügelänge: 20 mm. (♂).

Central-Afrika (6° s. Br., 22—26° ö. L. v. Gr., 25. Januar, von P. Pogge gesammelt).

NYMPHALIDAE.

18. *Salamis cacta languida* nov. subsp.

Salamis cacta cacta F., die auch in Ost-Afrika vorkommt, zeichnet sich in beiden Geschlechtern durch sehr intensiven violetten Schiller aus. Bei einem ♀ fehlt derselbe vollständig; nur die Adern der Hinterflügel sind lila angeflogen. Die Färbung des mittleren Teiles der Vorderflügel ist ferner nicht braun, sondern ockergelb; die schwarze Färbung ist weniger intensiv. Auch die Grundfärbung der Hinterflügel ist graubraun, gelbbraun bestreut. Die Färbung und Zeichnung der Unterseite will ich nicht näher beschreiben, da dieselbe ja bei allen blattnachahmenden Arten sehr grossen Veränderungen unterworfen ist. Bei dem einzigen Exemplar der in Rede stehenden Form ist sie durchgehends schmutzigbraun, vor dem Aussenrande der Vorderflügel nicht heller, mit ziemlich deutlichen Zeichnungen.

Flügelspannung: 66 mm.; Vorderflügelänge: 38 mm. (1 ♀).

Östliches Central-Afrika (Wald nordwestlich von Ru Ussorori, 21. Juni 1891, von Fr. Stuhlmann gesammelt).

19. *Hypolimnas dubius* Palisot ab. *latepicta* nov.

Die grosse Variabilität dieser Art veranschaulicht am besten die Reihe der benannten Formen, die Aurivillius anführt. Zu erwähnen wäre noch, dass von der ab. *mima* Trimen öfters auch Stücke mit weisslichem Wurzelteil der Hinterflügel vorkommen.

Zwei Stücke (von N.-Kamerun, Johann-Albrechtshöhe, ♂ am 2. Mai 1896, ♀ am 27. Mai 1896 von L. Conradt gesammelt) sind sehr auffällig dadurch ausgezeichnet, dass zwischen Ader 2 und dem Innenrande ausgedehnt lichte Beschuppung auftritt und zwar ist dieselbe beim ♂ vorherrschend gelb, nur nach aussen bläulich und weiss angelegt, beim ♀ vorherrschend bläulich, in der inneren Hälfte von gelb überdeckt. Diese Form unterscheidet sich auch dadurch von allen übrigen Formen sehr auffällig, dass die weissen Flecke der Subapikalreihe der Vorderflügel sehr stark verbreitert sind, besonders beim ♀, wo sie nach aussen blau begrenzt erscheinen. Beim ♂ ist die Ausdehnung dieser Flecke nicht so stark und nach aussen zu durch Vorhandensein dunkler Schuppen beeinträchtigt. Auf der Unterseite dehnt sich diese Subapikalbinde bei beiden Geschlechtern bis zum Aussenrande aus, was nicht einmal bei der sehr breit gebänderten ab. *drucei* Butl. vorkommt. Diese Form ist also hinreichend von allen benannten Formen ausgezeichnet, um einen eigenen Namen zu verdienen und möchte ich sie deshalb als ab. *latepicta* benennen.

Zwei weitere Stücke von *H. dubius* Palisot, aus derselben Lokalität wie die vorbenannten stammend (♂ am 29. Juni, ♀ am 19. Mai 1896 gleichfalls von L. Conradt gesammelt) verdienen dadurch hervorgehoben zu werden, dass bei ihnen der grosse Mittelzellenfleck doppelt so gross als gewöhnlich auftritt und wie bei ab. *drucei* Butl. mit dem inneren kleinen Flecke verbunden ist.

20. *Ergolis murina* nov. spec.

Steht der *E. enotrea* Cr. entschieden näher als den beiden anderen Arten, von denen sie sich sofort durch die grane Grundfärbung der Flügeloberseite, sowie den verschiedenen, mehr rechtwinkligen Verlauf der Mittelbinde der

Vorderflügel, die stärker gezackten Flügel, etc. unterscheidet. Aber auch mit *E. enotrea* Cr. ist sie nicht zu verwechseln, da diese Art durch die ausgedehnte blaugraue Färbung der Flügel sehr charakterisiert ist.

E. marina hat graue, ins Gelbgraue ziehende Grundfärbung der Flügel, mit ähnlichen Binden wie *E. enotrea* Cr.; doch ist die Extrabasale der Vorderflügel dunkel braungrau ausgefüllt und ebenso wie die Mittelbinde gleichmässig breit. Letztere ist nach unten nicht verschmälert und springt nach aussen stärker winkelig vor. Zeichnung des Aussenfeldes beim ♂ stärker hervortretend als beim ♀. Submarginallinie und Form des Aussenrandes ähnlich wie bei *E. enotrea* Cr. Der Raum vor dem Rande ist graubraun gefärbt und schwach; eine rotbraune Linie zieht dicht vor den Fransen. Der weissliche Vorderrandsfleck ist grösser und schärfer begrenzt als bei der genannten Art. Zeichnung des Wurzelfeldes der Hinterflügel wie auf den Vorderflügeln. Beim ♀ sind hier auf beiden Flügeln rote Schnuppen fast fleckartig in die Grundfarbe eingestreut. Mittel- und Aussenbinde gebogen, beim ♂ kräftiger als beim ♀. Letztere nach innen von einer Bogenlinie begrenzt. Äussere Querbinde dünn beginnend und in immer stärker werdenden Mondflecken endigend. Rotbraune Randlinie wie auf den Vorderflügeln. Fransen graubraun und weiss. Form des Aussenrandes wie beim ♀ der *E. enotrea* Cr., in beiden Geschlechtern gleich, während beim ♂ der letzteren Art die Ausschnitte sehr gering sind, Unterseite der Flügel bei beiden Geschlechtern gleich, ganz ähnlich bräunlich wie beim ♀ von *E. enotrea* Cr. (deren ♂ aber eine ganz zeichnungslose, sehr dunkle Vorderflügelunterseite hat) und auch mit ganz ähnlichen rotbraunen Zeichnungen, die auch denen der Oberseite entsprechen. Die Färbung ist nicht so dunkel wie bei dem ♂ der genannten Art, mehr dem ♀ ähnlich, jedoch vor dem Aussenrande nicht so auffällig aufgehellt. Körperteile entsprechend heller als bei *E. enotrea* Cr., graubraun.

Flügelspannung: ♂ 44, ♀ 40 mm.; Vorderflügelänge: 37, bzw. 34 mm.

Kamerun (Jaunde-Station, offene Stelle im Urwald, 6. Oktober 1897 von v. Carnap gesammelt).

21. *Asterope garega* Karsch.

Crenis natalensis, Hopffer (non Boisduval) in *Peters. Reise. Moss., Ins.* p. 381 (1862).

Crenis garega Karsch, *Ent. Nachr.* xviii. p. 173 (1892).

Crenis howensis, Auriv., *l.c.* (1898) (partim).

Asterope ansorgii Rothsch. & Jord., *Nov. Zool.* x. p. 534 (1903).

Da *A. howensis* Stgr. von Madagaskar völlig verschieden von Stücken des Festlandes ist, muss für diese der von Karsch gegebene Name *A. garega* wieder zur Anwendung gelangen. Mir liegt ausser der Type auch das von Hopffer als *C. natalensis* beschriebene Stück vor. Danach unterscheidet sich *A. garega* von *A. howensis* durch die fast gleiche Färbung beider Geschlechter sehr auffällig. Das ♂ ist etwas heller als das ♀. Es hat wie dieses eine lichte Apikalfleckenbinde der Vorderflügel, die beim ♀ unterbrochen ist; beim letzteren tritt noch in Zelle 3 ein grosser hell ockergelblicher Fleck auf, der der voriger Art mangelt; ferner ist der grosse Mittelzellenfleck fast drei mal grösser als dort und hat auch eine ganz andere Lage. Der Rand der Hinterflügel ist nur schwach verdunkelt, nicht ziemlich ausgedehnt schwärzlich beschuppt wie bei jener Art. Die Unterseite der Hinterflügel ist viel lichter und auffallend schwach bräunlich, nicht schwärzlich gezeichnet, wie bei *C. howensis* Stgr., bei

der die Zeichnungen überaus stark hervortreten. Die Flügel sind bei *C. garega* viel stärker ausgezogen als bei der viel zierlicher gebauten *C. howensis*. Die angegebenen Unterschiede veranschaulichen hinreichend die grosse Verschiedenheit beider Arten: sie sind so gross, dass es völlig ausgeschlossen erscheint, dass *C. howensis* die madagassische Lokalform von *C. garega* sein könnte.

Ein mir von Hr. Dr. Jordan gütigst zugesandtes ♂ der *A. ansorgei* Roths. & Jord. stimmt mit *A. garega* Karsch gut überein. Das bei der ersteren der Zellenfleck der Vorderflügel grösser ist und durch bräunliche Bestäubung mit dem ebenfalls grösseren Subapikalflecke zusammenhängt, ferner, dass die Aussenränder nicht so stark verdunkelt sind als bei *A. garega* und die Randpunktreihe stärker hervortritt, dürfte nur eine zufällige Abweichung sein, die eine Trennung nicht zulässt. Sollte sich *A. ansorgei* als eine besondere Lokalform von *A. garega* herausstellen—nur durch Vergleich grösseren Materials von Westafrika (Type von Baliburg) könnte dies sicher gestellt werden,—so müsste *utalensis* Hopff. (*non* Boisduval) als Synonym zu *ansorgei* gestellt werden.

22. *Pseudacraea lucretia* Cr.

Von ab. *expansa* Butl. zur ab. *heliogenes* Butl. kommen Übergänge vor. Ein solches Exemplar (♂) stimmt in der Ausdehnung der lichten Zeichnung der Vorderflügel mit der ersteren Form überein; die Färbung derselben ist jedoch nicht weiss, sondern gelblich angefliegen. Innenrandsfleck der Vorder- und Mittelbinde der Hinterflügel gelb wie bei ab. *protracta* Butl. (bei ab. *heliogenes* Butl. ist sie ockergelblich). Ausdehnung der Hinterflügelbinde nicht ganz so stark wie bei der letzteren Form.

Flügelspannung: 71 mm. (♀).

Das Exemplar stammt vom N.-Nyassa-See (Ubena—Langenburg, April 1899, von Goetze gesammelt).

23. *P. dolomena* Hew.

Bei einem ♂ von Kamerun dehnt sich die rotbraune Färbung des Innenrandsteiles bis zur Subapikalbinde aus; diese ist von doppelter Breite. Hinterflügel-mittelbinde gleichfalls verbreitert.

Flügelspannung: 53 mm.

Ein ♀ von Guinea infer. (von Pogge) weicht sehr auffällig vom gewöhnlichen ♀ ab. Die Subapikalbinde ist sehr stark verschmälert und nicht gelb, sondern rotbräunlich. Innenrandsteil von ähnlicher Ausdehnung wie beim ♂, ebenfalls rotbraun; beim gewöhnlichen ♀ ist nur ein unregelmässig gelber Fleck in der Mitte des Innenrandes vorhanden. Ganz abweichend ist auch die lichte Färbung der Hinterflügel; sie beschränkt sich auf eine mässig breite, gleichmässige Binde vor der Flügelmitte (hinter den äusseren schwarzen Flecken); ihre Färbung ist gelblich, bräunlich angefliegen, nicht reingelb.

Flügelspannung: 65 mm.

24. *P. togoënsis* nov. spec.

Aus der Verwandtschaft von *P. eurytus* L. und *P. imitator* Trim.; von beiden aber durch die in die Mittelzelle der Vorderflügel reichende Subapikalbinde der Vorderflügel, sowie die rote Färbung der Wurzel der Hinterflügel auffällig

verschieden ; von ersterer Art unterscheidet sie ferner der sehr kleine Basalfleck der Hinterflügel, von letzterer die bis zum Innenrande sich ausdehnende braune Färbung der Hinterflügelunterseite.

Flügel ähnlich wie bei den genannten Arten, schwärzlich, mit schwarzen Flecken in der Mittelzelle und in Zelle 1 *b* ; in der Anlage stimmen diese mit den genannten Arten überein. Der weisse Fleck hinter der Mitte des Innenrandes der Vorderflügel ist nicht grösser als bei *P. imitator* Trim. Die weisse Schrägbinde ist völlig verschieden von der der beiden genannten Arten ; sie reicht nach unten unter Ader 3 herab, ist hier am schmalsten und verbreitert sich nach dem Vorderrande zu ziemlich stark : sie ist von der der verwandten Arten auffällig dadurch unterschieden, dass sie die ganze obere Ecke der Mittelzelle einnimmt ; sie breitet sich überhaupt viel weiter nach innen aus. Mittelbinde der Hinterflügel etwas schmaler als bei den Verwandten, oben schmal, unten breit, nach innen bis zu der mittleren Punktreihe reichend. Von dieser breitet sich bis zur Wurzel rotbräunliche Färbung aus. Unterseite mit denselben Zeichnungen wie die Oberseite und der der Verwandten sehr ähnlich. Die rotbraune Färbung des Basalfeldes ist lebhaft braun und dehnt sich über die Mitte des Vorderrandes, nach unten bis zum Innenrande aus. Sonst sind die Hinterflügel, ebenso wie die übrigen Körperteile, denen der verwandten Arten durchaus ähnlich.

Sehr nahe steht diese Art der *P. tirikopsis* Neave (*Norit. Zool.* xi. p. 332, 1904), von der ich sie nur ungenügend zu trennen weiss : doch ist der Innenrand der Hinterflügel nicht ockergelb ; auch erscheint es mir sehr unwahrscheinlich, dass eine und dieselbe Art an zwei nicht nur so weit entfernten, sondern auch so verschieden zusammengesetzten Lokalitäten vorkommen könnte, wie es Togo und Victoria Nyanza sind.

Flügelspannung : 70 mm. (1 ♀).

Togo (Misahöhe, Kame, 11. März 1894, von E. Baumann gesammelt).

25. *Pseudargynnis hegemon nyassae* nov. subsp.

Stücke vom Nyassa-See sind nicht unwesentlich verschieden von anderen Lokalitäten. Sie sind im ganzen heller, und zeichnungsloser. Besonders fällt auf den Vorderflügeln der Mangel der zweiten Fleckenreihe der äusseren Flügelhälfte auf. Saumfleckreihe beider Flügel schwächer, wie überhaupt mehr oder weniger auch die übrigen Zeichnungen. Auf den Hinterflügeln mangelt mit Ausnahme der Marginal- und Submarginalfleckreihe jede Zeichnung ganz ; beim ♀ sind nur am Schlusse der Mittelzelle kleine schwarze Flecken schwach angedeutet. Unterseite der Flügel beim ♂ etwas schwächer, beim ♀ sehr scharf gezeichnet ; bei letzterem ist die violettbraune Färbung an der Spitze, besonders der Hinterflügel, sehr verbreitert.

Flügelspannung : ♂ 47, ♀ 50 mm. ; Vorderflügelänge : 24 bzw. 26 mm.

N.-Nyassa-See (Poroto-Rangwe-Miss., ♂ 5., ♀ 11. Oktober 1899, von Goetze gesammelt).

26. *Aterica galene* Brown ♀-f. *dimorpha* nov.

Während das ♀ von *A. galene* gewöhnlich weiss gefleckt ist, treten selten Stücke mit gelblichen Flecken auf. Bei dem mir vorliegenden ♀ ist der Mittelteil der Hinterflügel sogar bräunlich angeflogen und wird nach aussen bis zur ersten Saumlinie braun begrenzt. Bei dem gewöhnlichen ♀ ist diese braune Begrenzung

nur im unteren Teile mehr oder minder ausgedehnt vorhanden. Auch unterseits ist die gewöhnlich weissliche Färbung gelblich.

Flügelspannung: 67 mm. (♀).

Kamerun (Barombi-Station, von Preuss gesammelt).

27. *Aterica galene* ab. *theophane* Hopff.

Diese Form neigt ausserordentlich zur Veränderung hin. Beim ♂ variiert besonders die braune Begrenzung des Hinterflügelmittelfleckes in der Ausdehnung sehr stark. Die ♀ haben stets weisse Flecke der Vorderflügel, aber sehr abweichende Färbung der hinteren. Diese ist entweder ausgedehnt einfarbig safrangelb. (bräunlich) (beieinem ♀ von Mikindani, von Reimer), oder hellgelblich auswärts bräunlich, nach unten weisslich begrenzt, oder sogar ganz weisslich. Die beiden letzteren Formen sind aus Ost-Afrika (Mpapua, von Glauning) vertreten.

28. *Leucosticha daedalus* F.

Zwei Stücke von N.-Nyassa-See (Langenburg, ♂ 18. Juni 1899, von Fülleborn) und D. O.-Afrika (Songen Ungoni, ♀ 31. Juli 1900, von Stierling) verdienen durch folgende Merkmale hervorgehoben zu werden. Die weisse Befleckung der äusseren Punktreihe beider Flügel ist geringer; die schiefergraue Beschuppung längs des Aussenrandes stärker. Die Unterseite beider Flügel ist auffällig verschieden; sie ist schmutzig gelbgrau, mit violettbraunen Zeichnungen. Auch bei der *daedalus meleagris* Cr. variiert die (ockergelbe) Grundfärbung der Flügelunterseite in der Intensität ziemlich stark; sie ist z. B. bei ostafrikanischen Exemplaren (D. Ost-Afrika, Korogwe, Mitte Mai 1893, ♂, von O. Neumann; N. Usambara, Tewe, Dezember 1884—Februar 1895, ♀, von Meinhardt) wesentlich heller als bei westafrikanischen (z. B. von Togo, ♂ Misahöhe, 27. Oktober 1893, von E. Baumann; ♀ von Bismarekburg, 8. September 1893, von L. Conradt).

29. *Euphaedra viridicaerulea* nov. spec.

Diese interessante neue Art ist nahe verwandt mit *E. inanum* Butl.; die abweichende Färbung der Ober- und Unterseite, die schwarzen Marginalflecke unten auf den Hinterflügeln trennen sie jedoch hinreichend von ihr.

Vorderflügel wei bei jener Art schwarz; Wurzelfeld jedoch nicht grünlich angeflogen. Innenrandsfleck ins bläuliche schimmernd, sehr eingeschränkt; während er sich dort bis zur Ader 3 und der Subdorsale ausdehnt, ist er hier auf Zelle 1a und das untere Drittel von 1b beschränkt und breitet sich auch nach den Seiten zu nicht so weit aus. Die weisse Subapikalbinde ist etwas schmaler, sonst ähnlich wei beim ♀ der genannten Art angelegt; sie ist jedoch in der unteren Hälfte fast ganz von bläulichen Schuppen überdeckt und wird auch nach aussen, innen und unten viel stärker bläulich (nicht grünlich) begrenzt als dort. Auch längs des mittleren Teiles des Vorderrandes, am Schlusse und ausserhalb der Mittelzelle breitet sich grünbläulicher Anflug aus. Färbung des Aussenrandes wei bei *E. inanum* Butl., doch ist der Saum stärker abgerundet, besonders tritt auch der Vorderwinkel nicht so stark hervor. Hinterflügel mit ausgedehnt bläulichgrüner Färbung im Mittelfelde; sie dehnt sich jedoch nur bis zur Grenze des Wurzelfeldes aus und weist auch keine Spur gelbbraunlicher Schuppen auf,

die jene Art so gut auszeichnen; hingegen ist im inneren Teile, etwa von der Mitte der Zelle 4 bis zur Mitte der Zelle 1c ein grosser weisslicher, in die bläuliche Färbung übergehender Fleck vorhanden. Auch längs Ader 7 sind weissliche Schuppen wahrnehmbar. Bläuliche Marginalfleckchen sind nur vor dem Analwinkel schwach wahrnehmbar. Sehr abweichend ist besonders auch die Unterseite der Flügel gefärbt und gezeichnet. Die Grundfärbung der vorderen ist blaugrün, in der Mittelzelle, vor dem Aussenrande und im äusseren Teile des Vorderrandes gelbgrün. Die drei schwarzen Flecke der Mittelzelle ähnlich wie bei der genannten Art, ebenso die weissliche Subapikalbinde, die jedoch hier nicht so scharf begrenzt ist. Flügelspitze ausgedehnter weisslich. Vor dem Innenwinkel steht in Zelle 1b ein schwarzer Fleck. Die Submarginalreihe bläulicher Fleckchen fehlt. Innenrand bläulichgrün, einwärts schwärzlich, Hinterflügel vorherrschend gelbgrünlich, ins bräunliche ziehend; nur ein breiter oberer Basalteil, der Vorderrand und mehr oder weniger der äussere Teil des Saumfeldes sind blaugrünlich. Eine breite, nach unten sich verschmälernde weissliche Binde hängt von der Mitte des Vorderrandes fast bis zur Ader 3 herab. In der Mittelzelle stehen zwei schwarze Fleckchen. Der am Schlusse derselben bei *E. inanam* auch oberseits wahrnehmbare strichartige dunkle Anflug fehlt hier ganz. Besonders ist die neue Art auch durch die schon erwähnte Submarginalreihe schwärzlicher Flecke ausgezeichnet, die in grünbläulichem Anfluge stehen. Die übrigen Körperteile ähnlich wie bei der genannten Art.

Flügelspannung: 80 mm.; Vorderflügelänge: 45 mm. (1 ♀).

Süd-Kamerun (Bipindi, März 1901, von G. Zenker).

30. *Euphaedra adelica* nov. spec.

Bildet in gewisser Hinsicht einen Übergang von *E. inanam* Butl. zu *E. ceres* F. Sie unterscheidet sich von ersterer, ebenso wie von der vorbeschriebenen *E. viridicaerulea*, u.a. durch das Auftreten schwarzer Zeichnungen im Mittelfelde beider Flügel auf der Unterseite; von allen Formen der *E. ceres* wird sie durch den Mangel jeglicher schwarzer Zeichnung unterseits vor dem Rande gut getrennt.

Vorderflügel schwarz, mit wie bei verwandten Arten grünem Innenrandsteile. Subapikalbinde wie bei *E. inanam* und *E. viridicaerulea* weisslich, in der Mitte etwas eingeschnürt. Hinterflügel blaugrün (etwa wie bei *preussi njami*), vor dem Aussenrande in schwarzblau übergehend, also ganz verschieden von denen der genannten Art. Ein weisser Apikalfleck der Vorderflügel ist nicht vorhanden; nur die Fransen sind kurz vor der Spitze weiss. Sonst sind die Fransen schwarz, sehr verloschen weiss gescheckt. Unterseite beider Flügel grünlich, stellenweise gelblich bestäubt. Mittelzellenflecke der Vorderflügel ähnlich wie beiden Verwandten; die äusseren überaus gross, der innere Fleck jedoch sehr klein. Am Schlusse der Zelle steht ein schwarzer Strich; die innere Begrenzung der weisslichen Subapikalbinde wird von einer schwarzen Fleckenbinde eingenommen, deren unterer Teil sehr breit ist. Unter diesem steht in Zelle 2 noch ein schwarzer Fleck. Der Randfleck in Zelle 1b von *E. viridicaerulea* fehlt. Hinterflügel mit deutlicher weisser Mittelbinde, die nach innen von einer schwarzen Punktreihe begrenzt wird, deren oberer Teil am stärksten, strichartig, auftritt. Am Basalteile der Subcostale steht noch ein schwarzlicher Wisch. Mittelzelle mit je einem grossen oberen und äusseren und einem kleineren unteren Fleckchen, die bei den Verwandten nur sehr verloschen auftreten. Die schwarze Submarginalreihe

von *E. viridicaerulea* fehlt; an ihrer Stelle ist die Grundfarbe etwas aufgelichtet. Fühlerkolbe wie bei letzterer, dunkler als bei *E. inanum*, ebenso die Beine. Die verschieden gefärbte (ganz grüne) Unterseite der Flügel macht einen von den beiden genannten Arten sehr verschiedenen Eindruck.

Flügelspannung: 72 mm.; Vorderflügelänge: 40 mm. (1 ♀).

Togo (Bismarckburg, 11. Mai 1893, von L. Conradt gesammelt).

31. *Euphaedra themis* Hb. ab. *reducta* nov.

Unterscheidet sich von ab. *janetta* Butl., der sie am nächsten steht, besonders dadurch, dass der rote Fleck an der Wurzel der Vorderflügelunterseite ganz fehlt. Auf den Hinterflügeln ist derselbe beim ♂ wie bei jener Form ausgedehnt violettrot; beim ♀ ist hingegen nur der basale Teil des Vorderrandes schmal ziegelrot angelegt. Das ♀ vermittelt also den Übergang zur ab. *aurata* Kirby. Apikalfleck der Vorderflügel beim ♂ wie bei ab. *janetta* ganz lebhaft gelb, beim ♀ oberseits hellgelb, nach oben weisslich, unten weiss. Rote Schuppen fehlen im basalen Teile beider Flügel oberseits gänzlich.

Flügelspannung: ♂ 69 mm., ♀ 78 mm.; Vorderflügelänge: 38 bzw. 44 mm.

Kamerun (♂ Victoria, ♀ Barombi-Station, von Preuss).

32. *Euphaedra gausape* Butl. ab. *extensa* nov.

Bei dieser sehr interessanten Form ist der gelbe Subapikalfleck der Vorderflügel fast um das doppelte verbreitert; er reicht nach unten viel weiter, fast bis zur Ader 3 herab. Während ferner bei typischen Stücken längs des Innenrandes nur grünliche Beschuppung auftritt, ist hier der grössere Teil des Innenrandesfeldes bis zur Ader 3 und der Subdorsale gelb gefärbt und nur schwach grünlich bestäubt. Diese lichte Färbung nimmt die Form eines grossen, unregelmässig viereckigen Fleckes ein, der am Ursprung von Ader 3 dreieckig in die Mittelzelle hineinragt und nach oben zu fast mit dem grossen Subapikalfleck zusammenhängt. Auch der ganze Diskus der Hinterflügel wird durch gelbe Schuppen sehr auffällig aufgehellt. Unterseite wie bei typischen Stücken; auf den Vorderflügeln ist Zelle 2 sehr stark, auf den Hinterflügeln der Raum am Ende der Mittelzelle, sowie hinter derselben schwach aufgehellt. Grundfärbung der Mittelzelle der Vorderflügel unterseits bläulich, nicht grün.

Flügelspannung: 78 mm.; Vorderflügelänge: 40 mm. (1 ♀).

Kamerun (Barombi-Station, von Preuss).

33. *Euphaedra karschi* nov. spec.

Eine überaus interessante Art aus der Gruppe *E. gausape* Butl.—*xypete* Hew. und zwar steht sie durch die Form der Hinterflügel der ersteren näher als der letzteren, der sie besonders in der Zeichnung der Unterseite der Flügel ähnlich sieht. Gute Trennungsmerkmale bieten die schmale weissliche (nicht gelbe) Subapikalbinde der Vorderflügel, der schmale weisse Apikalfleck derselben, die scharf begrenzte, ockergelbe, nur bis zur Ader 2 sich ausbreitende Färbung der Hinterflügelunterseite, etc. Weitere Unterschiede sind in der folgenden Beschreibung angegeben.

Die Vorderflügel nähern sich in der Form der *E. xypete* viel mehr als der *E. gausape*; besonders fällt der, fast geradlinig abfallende Aussenrand auf, wie er nicht einmal so auffallend dem ♂ der letzteren Art eigen ist. Form der

Hinterflügel deutlich an die von *E. xypete* sich anschliessend; die Hinterflügel sind zwar etwas breiter als bei letzterer, doch ist ihr Aussenrand fast ebenso stark abgeschrägt; keinesfalls haben die Hinterflügel in der Form Ähnlichkeit mit dem gewöhnlichen Typus, der durch *E. xypete* repräsentiert wird. Färbung der Vorderflügel wie bei den verwandten Arten, besonders tritt der grünliche Anflug fast wie bei *E. xypete* auf; er ist am intensivsten am Innenrande, breitet sich aber weiter nach aussen als dort aus. Ferner ist auch im Aussenfelde grüne Beschuppung deutlich wahrnehmbar; sie fehlt bei den anderen Arten gänzlich. Subapikalbinde weisslich, sehr schmal (etwa wie bei *E. preussi* Stgr.), scharf begrenzt; sie besteht aus drei kleinen oberen (durch die Adern geteilten) Flecken und einem grossen, mehr nach aussen gerückten in Zelle 3. Apikalfleck weisslich; mehr als die Hälfte schmaler als bei *E. xypete*; bei *E. gausape* sind hingegen hier nur die Fransen schmal weisslich gefärbt. Färbung der Hinterflügel ungefähr wie bei der ersteren Art; doch ist die olivgrüne Färbung in der Mitte fast ebenso eingeschränkt wie bei *E. gausape*, dringt aber nach innen nur wenig in die Zelle hinein. Unterseite der Vorderflügel ähnlich wie bei *E. xypete*; sie weicht von ihr in folgenden Punkten ab: Zellenflecke bedeutend kleiner, getrennt; die weissliche, nicht gelbe Schrägbinde nach innen im unteren Teile viel schmaler schwarz begrenzt. Der hinter ihr liegende, dreieckige, grüne Vorderrandsteil ist ebenso wie der übrige viel schmalere Aussenrandsteil braun beschattet. Aussenbinde im unteren Teile undeutlich. Apikalfleck einfarbig weisslich, kürzer. Hinterflügelunterseite in der Färbung und Zeichnung, besonders aber in dem sich sehr ausbreitenden Karminrot ebenfalls der *E. xypete* näher stehend als der anderen Art. Besonders ist auch die schwarze Fleckenzeichnung ganz ähnlich angeordnet wie dort, im ganzen aber wesentlich stärker. Am Ende der Mittelzelle stehen zwei schwarze Flecke (wie bei *E. gausape*, der äussere ist aber verlängert). Der breite Innenrandsteil ist ganz ähnlich ockergelb wie bei *E. gausape*; er reicht nicht ganz bis zur Ader 3, weist aber nur in Zelle 2 karminrote Einmischungen auf; nicht aber nahe des Innenrandes wie bei der genannten Art. Die karminrote Färbung wird nach aussen ockergelb begrenzt, am breitesten zwischen den Adern 5—7. Flecke der schwarzen Submarginalreihe kleiner und dem Rande mehr genähert; hinter ihnen tritt grünliche Färbung auf. Schwarze Randlinie etwas breiter. Palpen, Brust, Beine und andere Körperteile ähnlich wie bei *E. xypete*.

Flügelspannung: 67 mm.; Vorderflügelänge: 36 mm. (1 ♂).

N.W.-Kamerun (Ikassa a. Ndian, 18. Mai 1900, von H. Rudatis).

Da die vorbeschriebene Art in auffälligerweise Merkmale zweier verschiedener Arten (*E. gausape* und *E. xypete*) in sich vereinigt, würde man sie als hybride Form deuten können, wenn das Vorkommen solcher bei den *Rhopalocera* in der Natur mit Sicherheit nachgewiesen worden wäre. Dies ist aber keineswegs der Fall; vielmehr sind viele voreilig als Bastarde aufgestellte Formen, nicht nur bei der Gattung *Euphaedra*, sondern z. B. auch bei *Parnassius* und *Colias* (ab. *chrysodona*) nur Aberrationen oder Lokalformen und keine Hybriden.

34. *Euphaedra xypete* Hew. ab. *mirabilis* nov.

Eine höchst interessante Form von *E. xypete*; sehr auffällig dadurch ausgezeichnet, dass die scharlachrote Färbung der Hinterflügelunterseite nur auf den Vorderrandsteil beschränkt ist und Ader 7 nicht überschreitet, während sie bei

normalen Stücken das ganze Mittelfeld einnimmt und sich fast bis zum Innenrande ausdehnt. Das einzige mir vorliegende ♂ weicht noch in folgenden Punkten ab: Subapikalbinde der Vorderflügel beiderseits ziemlich gerade abgeschnitten; die schwarzen Punkte in der Mittelzelle derselben unterseits kleiner und nicht zusammenhängend; die innere schwarze Begrenzung der gelben Subapikalbinde ist unten viel schmaler: ihre Fortsetzung in den Zellen 2 und 3 ist nicht verbreitert wie bei *E. xypete*. Die Fleckenbinden des Saumfeldes beider Flügel sind dem Rande näher gerückt. An Stelle des fehlenden rot der Hinterflügel tritt grünliche, gelb bestäubte Beschuppung auf.

Flügelspannung: 65 mm.; Vorderflügelänge: 35 mm. (1 ♂).

Kamerun (Barombi-Station, von Preuss).

35. *Euphaedra luperca* Hew. ab. *luteofasciata* nov.

Ein ♂ und ♀ weichen durch die hellgelbliche Grundfärbung der Vorderflügelbinde von der weissgebänderten typischen Form ab. (Hewitson nennt dieselbe "rufous white").

Flügelspannung: 66 mm.; Vorderflügelänge: 34 mm. (♂).

35. *Euphaedra losinga* Hew. ab. *impunctata* nov.

Während bei dieser Art die schwarzen Mittelzellenflecke auf der Unterseite der Flügel höchst selten zum Verschwinden neigen, zeichnet sich ein ♀ durch gänzlichen Mangel derselben aus. Das Stück unterscheidet sich auch in anderen Punkten sehr auffällig, so dass es fast wie eine andere Art aussieht. Die Subapikalbinde der Vorderflügel ist im oberen Teile auffällig verschmälert; im unteren, breiten Teile in Zelle 3 dunkel geteilt. Der weisse Apikalfleck der Vorderflügel reicht beiderseits nicht so weit herunter und ist auch sehr scharf abgeschnitten. Auf der Unterseite der Vorderflügel ist der obere Teil der weissen Binde sehr scharf begrenzt; die untere Hälfte ist einfarbig gelb, mehr eingeschränkt. Auf den Hinterflügeln fehlt unten die weisse Binde bis auf einen kleinen oberen Fleck gänzlich.

Flügelspannung: 75 mm.; Vorderflügelänge: 39 mm. (1 ♀).

Süd-Kamerun (Bipindi, Urwaldweg, September 1898, von G. Zenker).

37. *Euphaedra wardi* Druce, *losinga* Hew., *spatiosa* Mab.

Bei ersterer Art möchte ich erwähnen, dass die Subapikalbinde der Vorderflügel von ockergelb bis gelb abändert; auch in der Breite ist sie beträchtlichen Schwankungen unterworfen. Der violette Schimmer vor dem Innenwinkel der Hinterflügel wird zuweilen recht undeutlich. Die Unterseite der Flügel ist zuweilen ganz grünlich ohne blauen Anflug. Die Flügelspannung des ♀ variiert von 74—93 mm. Auch bei *E. losinga* Hew. ändert die ockergelbe Vorderflügelbinde in der Breite ziemlich stark ab; sie wird zuweilen nach unten von einem rostgelben Flecke in Zelle 2 begrenzt. Die Intensität des weissen Streifens der Hinterflügelunterseite variiert gleichfalls. Beim ♀ von *E. spatiosa* Mab. ist die gelbe Schrägbinde der Vorderflügel zuweilen doppelt so breit wie gewöhnlich.

38. *Euryphene intermedia* nov. spec.

Steht ganz nahe bei *E. innocua* Gr. Smith; die Unterschiede von ihr sind in der folgenden Beschreibung näher angegeben.

3. Vorderflügel wie bei der genannten Art ganz ähnlich gefärbt und gezeichnet, doch ist die lichte Beschuppung am Vorderrande, an der Wurzel der Subdorsale und am Innenrande nicht blaugrün, sondern mehr gelbgrün; sie ist auch am letzteren viel ausgedehnter und erstreckt sich fast bis zur Ader 2. Der äussere der beiden schwarzen Striche in Zelle 1 *b* von *E. innocua* ist sehr dünn und wird fast nur durch zwei schwarze Punkte vertreten. Die gelbe Subapikalbinde ist ähnlich wie bei der genannten Art, doch breiter und nach unten fast bis zur Mitte der Zelle 2 reichend. Hinterflügel von denen von *E. innocua* dadurch abweichend, dass der ganze Mittelteil nebst dem Wurzelfelde auffallend gelbgrün (fast goldgrün) auftritt. Der dicke schwarze Strich am Schlusse der Mittelzelle fehlt ganz und der dahinter liegende ist sehr verloschen. Mittelzellenflecke ähnlich wie bei genannter Art. Auf der Unterseite der Vorderflügel ist die Spitze etwas ausgedehnter weisslich beschuppt; ferner ist der obere Teil der gelben Binde sehr hell, fast weisslich; der untere, lebhaftere Teil ist sehr verloschen und tritt nur sehr wenig hervor. Der schwarze Strich in der Mittelzelle vor deren Ende ist nicht gerade, sondern doppelt gebogen und tritt wurzelwärts sehr spitz vor. Die schwärzliche unterbrochene Schrägbinde an der Grenze des Saumfeldes wird nur durch einen schwärzlichen Fleck in Zelle 1 *b* vertreten. Der schwarze Streifen vor dem Saume ist sehr verloschen und tritt kaum hervor. Die Färbung des Saumfeldes, auch der Hinterflügel, ist mehr schmutzig lehm-braun; diese Färbung geht auf den Hinterflügeln in den nicht lebhaft ockergelben, sondern schmutzig ockerfarbenen Innenrandteil über. Grüne Töne sind auf den Hinterflügeln sehr eingeschränkt; hingegen tritt die bläuliche Färbung mehr hervor. Der lichte Fleck in der Zelle ist breiter, nach innen schmaler, nach aussen breiter schwärzlich begrenzt; hier setzt sich die dunkle Färbung nach unten deutlicher fort. Der schwarze kurze Strich hinter der Mittelzelle ist sehr stark, mehr rechtwinkelig. Die schwärzliche Submarginalbinde ist überaus schwach ausgeprägt; sie ist auch viel weiter vom Saume entfernt als bei *S. innocua*. Der untere Teil des Saumes ist durch bläulichweisse Schuppen aufgehellte; am stärksten treten dieselben im unteren Teile vor dem Innenwinkel auf, der ziemlich ausgedehnt bläulich, dunkel durchschnitten erscheint. Die Hinterflügel sind im Verhältnis viel breiter als bei *E. innocua*; der Innenwinkel tritt nicht spitz hervor, da der Rand auf Ader 2 und 1 *b* sehr abgerundet ist. Ein gutes Unterscheidungsmerkmal giebt auch die Fühler kolbe ab, da sie oben nicht einfarbig schwarz, sonder vor der Spitze braun gefärbt ist. Alle übrigen Körperteile ähnlich wie bei *E. innocua*.

Flügelspannung: 57 mm.; Vorderflügelänge: 30 mm. (1 ♂).

Kamerun (Barombi-Station, von Preuss).

39. *Euryphene barce* Doubl. ab? *achillaena* nov.

Trotz ihres ziemlich verschiedenen Aussehens dürfte *achillaena* doch nur eine Form von *E. barce* sein, worauf besonders die gleiche Zeichnungsanlage auf der Flügelunterseite hindeutet. Während das gewöhnliche ♀ auf den Vorderflügeln ausgedehnt glänzend blaugrün gefärbt ist, ist diese Form hier violettblau angefliegen.

Diese Färbung nimmt in sehr ausgesprochenem Maasse das Wurzel- und Mittelfeld der Hinterflügel ein. Auf den Vorderflügeln ist der grosse weisse Subapikalfleck zu einem nur $\frac{1}{4}$ so schmalen Streifen reduziert. Der weisse Fleck

am Vorderrande vor der Spitze erscheint grösser. Unterseite mit ähnlichen Zeichnungen wie die gewöhnliche Form, jedoch sehr einförmig. Hinterflügel mit weisslichen Flecken im Wurzel- und Mittelfelde an Stelle der gelben. Möglicherweise ist diese Form doch eine von *D. birce* verschiedene Art, was ich ohne Kenntniss des dazugehörigen ♂ nicht entscheiden mag.

Flügelspannung: 56 mm.; Vorderflügelänge: 32 mm. (1 ♀).

Togo (Bismarckburg, 20. Juli—20. September 1890, von R. Büttner).

Vielleicht gehört ein ♂ dazu, das oberseits nicht grün, sondern ganz dunkelblau gefärbt ist. Apikalfleck der Vorderflügel, sowie Discus der Hinterflügel sind violettblau. Auf der Unterseite stimmt dies Stück genau mit gewöhnlichen ♂ überein (N.-Kamerun, Victoria, von Strunk); Flügelspannung: 50 mm.; Vorderflügelänge: 27 mm. (1 ♂).

40. *Euryphe laetitia* Ploetz ♀ ab.

Das gewöhnliche ♀ hat eine gelbe Subapikalbinde der Vorderflügel; es kommen jedoch auch Stücke vor, bei denen der obere Teil dieser Binde weiss ist und wird ein solches Stück von Hewitson (*Euryphe eliensis* iii. t. 6. f. 23. 24. 1866) abgebildet. Das Berliner Museum besitzt ein Exemplar von Kamerun (Barombi-Stat., von Preuss).

41. *Diestogyna fuscomarginata* nov. spec.

Diese neue Art steht der *D. amicia* Hew. näher als der *D. milnei* Hew., besonders durch die Form der Hinterflügel, die nicht so stark verlängert wie bei letzterer, aber auch breiter sind als bei *D. amicia* Hew. Die Zeichnung der Vorderflügel erinnert jedoch mehr an *D. milnei*.

Vorderflügel wie bei den genannten Arten braun, nach aussen schwarz, doch tritt erstere Färbung heller auf. Zeichnung der Mittelzelle ähnlich wie bei letzterer Art, doch ohne weissen Fleck. Die weisse Fleckenbinde weicht von der der *D. milnei* dadurch ab, dass ihr oberer Teil viel schmaler ist und auf dem innersten Teile des Mittelfleckes aufsitzt. Hinterflügel verhältnismässig breiter und stärker abgerundet als bei *D. amicia*, mit noch breiterem schwarzbraunem Rande als *D. milnei*, in dem sich die äussere Fleckenreihe nur undeutlich abhebt. Vor dieser steht eine Reihe dreieckiger schwarzer Flecke. Franssen am Innenwinkel nicht so scharf weiss. Die Unterseite der Flügel ist viel lichter als bei *D. milnei*. Die Mittelzelle ist durch weniger weissliche Färbung ausgezeichnet. Auf den Hinterflügeln ist der dunkelbraune Fleck in der Mitte nur schwach angedeutet. Die braune Färbung des Wurzelfeldes bildet nach unten zu nicht diese Auszackungen wie bei den verwandten Arten. Die weissliche Bestäubung vor dem Innenwinkel ist geringer ausgedehnt. Hinter der weisslichen Punkt- (Flecken)-Reihe ist noch eine deutliche Reihe brauner Monde vorhanden. Auch die weissen Punkte weisen nach aussen braune schattenartige Begrenzung auf.

Flügelspannung: 46 mm.; Vorderflügelänge: 24 mm. (1 ♀), geringer als bei den Verwandten.

N.-Kamerun (Johann-Albrechtshöhe, 5. Juli 1896, von L. Conradt gesammelt).

Es erscheint mir sehr unwahrscheinlich, dass die vorliegende Art das unbekannte ♀ der vom Congo beschriebenen *D. plagiata* Aur. sein könnte.

42. *Diestogyna aurivillii* nov. spec.

Kann nur mit *D. veronica* Cr. verglichen werden, mit der sie eine sehr ähnliche Färbung und Zeichnung der Oberseite gemeinsam hat; Unterschiede von derselben sind weiter unten angegeben. Mit *D. barombina* kann sie schon wegen der weissen Punktreihe der Vorderflügel nicht verglichen werden, ebenso wie der schwarze Zellenfleck unten auf den Hinterflügeln diese Art gut auszeichnet. Auch *D. feronia* Stgr. kommt nicht in Betracht, da sie "sammet-blanschwarze, prachtvoll tiefblau schillernde Flügel" hat, die bei der neuen Art mehr ins Grüne ziehen. Mit anderen Arten kann sie nicht verwechselt werden.

Vorderflügel etwas stärker eingebogen als bei *D. veronica* Cr., sonst dieser ähnlich, besonders in der Zeichnung, die aber weniger als dort hervortritt. Grünlicher Schimmer breitet sich besonders in der Mittelzelle aus. Der schwärzliche Streifen hinter dem Schlusse der Mittelzelle ist schmaler und setzt sich nur bis zur Ader 3 fort. Nach aussen im oberen Teile wird dieser Streifen von einem weisslichen Fleckchen begrenzt. Grünliche Schüppchen sind an verschiedenen Stellen nahe des Vorderrandes angehäuft. Die weisse Punktreihe vor dem Vorderwinkel ist ziemlich stark ausgeprägt. Der Schiller der übrigen Flügelfläche ist viel dunkler als bei *D. veronica*, fast noch dunkler als bei *D. amaranta* Karsch. Unterseite sehr dunkel und scharf gezeichnet, sonst ähnlich der ersteren Art. Die äussere Begrenzung des dunklen Wurzelteiles der Vorderflügel zeigt einen anderen Verlauf. Hinterflügel sehr dunkelbraun, mit breiter scharf begrenzter Binde im basalen Teile; nach innen wird diese Binde von gelber Färbung umsäumt, am breitesten, fleckartig, im oberen Teile. Mittelzelle mit einem grossen dunkelbraunen Flecke und einem helleren am Ende. Der schwärzliche Fleck in der Mitte ist ausgedehnter. Äusserer Flügelteil braun, sehr eintönig, mit weisslicher Punktreihe und verloschener Zackenlinie.

Flügelspannung: 44 mm.; Vorderflügelänge: 23 mm. (1 ♂).

Kamerun (Barombi-Station, von Preuss).

43. *Euryphura ochracea* nov. spec.

Weicht von allen bekannten Arten ab.; am nächsten steht sie noch der *E. plantilla* Hew., doch ist das ♂ dieser Art auf der Flügeloberseite stets ganz dunkel, während *E. ochracea*-♂ graubräunlich, ockerfarben gemischt ist, am stärksten in der Mittelzelle (die auf den Vorderflügeln fast ganz ockerfarben ausgefüllt ist) und in der Mitte, wo eine gleichfarbige Binde auftritt, die auf den Vorderflügeln undeutlich, auf den Hinterflügeln breit und scharf abgeschnitten ist. Das ♀ ist wie das von *E. plantilla* ab. *claudianus* Druce auf der Flügeloberseite vorherrschend rötlichbraun, weicht aber von diesem dadurch ab, dass auch der grössere Teil der Vorderflügel braun ist. Sonst sind die Zeichnungen der genannten Art ähnlich. Beim ♂ ist auf den Vorderflügeln der grosse schwärzliche Linsenrandschatten von *E. plantilla* nicht vorhanden; auf den Hinterflügeln ist der schwärzliche Zackenstreifen des mittleren Teiles viel schmaler, ebenso wie der diesem folgende schwärzliche Querschatten durch einen Zackenstreifen vertreten ist. Beim ♀ ist wie bei manchen ♀ von *E. plantilla* im äusseren Teile eine ziemlich breite, weissliche Binde vorhanden, die aus einzelnen Zacken und Strahlen zusammengesetzt ist. Auch die weisse Punktreihe folgt dahinter; die von ihr begrenzten schwarzen Flecke sind sehr gerundet. Auf den Hinterflügeln

stechen die schwarzen Makeln der Mittelzelle stark hervor, während der mittlere Zackenstreifen dunkelbraun ist und wenig hervortritt. Der Aussenrandteil beider Flügel ist beim ♀ bräunlichgrau gefärbt. Die Unterseite der Flügel ist beim ♂ hell gelbbraunlich, sehr eintönig, schwach braun (nicht schwarz) gezeichnet. Die dunkle Punktreihe im Aussenteile der Vorderflügel ist sehr verloschen und nur schwach weisslich begrenzt. ♀ unterseits dem ♀ von *E. plantilla* ähnlich, jedoch eintöniger, mehr violettbraun, schwächer gezeichnet. Auf den Vorderflügeln reicht die weisse Zeichnung nur bis zur Mitte (der ganze Innenrandteil wird von violettbräunlicher Beschuppung eingenommen). Hinterflügel sehr eintönig violettbraun, nicht weiss, sondern nur schwach dunkelbraun und violett gezeichnet. Fühler oberseits nicht schwarz, sondern rotbraun, wie auf der Unterseite.

Flügelspannung: ♂ 51 mm., ♀ 58 mm.; Vorderflügelänge: 28 mm., bzw. 30 mm.

Congo-Gebiet (Mukenge, von Pogge).

44. *Euryphura fulminia* nov. spec.

Wie *E. aurantiaca* Anr., Aussenrand der Vorderflügel jedoch viel stärker ausgebogen, wodurch der Vorderwinkel viel stärker hervortritt. An Stelle der weissen Mittelbinde der genannten Art ist nur schwacher lichter Schimmer sichtbar. Der schwarze Mittel- (Schatten)-Streifen zeigt einen ganz abweichenden Verlauf: er wendet sich nach unten nicht gerade zum Innenrande, sondern ist der Subdorsale sehr genähert, also stark der Wurzel zugekehrt. Der äussere dunkle Fleckenstreifen, sowie die weisse Punktreihe verlaufen mehr geschwungen. Auf den Hinterflügeln fallen sofort die drei Aussenstreifen auf, die in der unteren Flügelhälfte grüne Färbung zwischen sich einschliessen; der äussere dieser Streifen ist auch aus viel stärkeren Zacken und Bogen zusammengesetzt als bei *E. aurantiaca*. Ganz abweichend ist auch die Unterseite gefärbt, da sie vorherrschend ziegelbraun, stellenweise violett angeflogen ist. Neben den bereits bei Beschreibung der Oberseite hervorgehobenen Merkmalen fallen sofort die weniger ausgedehnte lichte Färbung an der Flügelspitze der Vorderflügel, sowie der rotbraune (nicht ockerfarbige) Aussenrand derselben auf. Alle Zeichnungen sind braun, nicht schwärzlich. Aussenhälfte der Hinterflügel fast ganz braun, mit weisslichen Zeichnungen, die denen von *E. aurantiaca* ähnlich sind. Palpen auswärts grau.

Flügelspannung: 60 mm.; Vorderflügelänge: 32 mm. (1♀).

West-Afrika (ohne nähere Angabe).

45. *Euryphura oliva* Suffert, *Iris* xvii. p. 112 (1904).

Durch die grünliche Grundfärbung erinnert diese Art an *E. achlys* Hopff., doch hat sie mit dieser nichts zu thun, sondern ist mit *E. aurantiaca* Anr. am nächsten verwandt, die aber stets dunkel ist, ohne jeden grünlichen Schimmer. Das ♂ ist schlauker, oberseits ganz grünlich, mit ähnlichen, aber recht scharfen Zeichnungen wie *E. aurantiaca*. Weisse Punktreihe vor dem Vorderwinkel der Vorderflügel deutlich. Das ♀ ist oberseits in der Zeichnung ebenfalls der genannten Art ähnlich, doch sind diese ebenfalls sehr scharf ausgeprägt. Die weisse Mittelbinde der genannten Art ist nur im oberen Teile durch lichtgrüne Färbung vertreten; sie setzt sich nach unten, bis zum Innenrande der Hinter-

flügel in grünlicher Färbung fort. Auch eine gleichfarbige Aussenbinde ist auf beiden Flügeln vorhanden, wenn man von einer solchen überhaupt sprechen kann, da hier nur die dunklen Zeichnungen grünlich umrandet sind. Die lichte Punktreihe nicht deutlich hervortretend, da ihre Färbung nicht weiss, sondern hellgran ist; die hinter ihr auftretenden Flecke sind zu Längsstrichen ausgezogen. In der Form der Flügel erinnert *E. oliva* an *E. plantilla* Hew. mehr als an *E. aurantiaca*, besonders weil der Vorderflügelaussenrand stärker ausgebogen ist, aber auch die Hinterflügel sind jener ähnlicher. Unterseite des ♂ lebhaft ockergelb, auf den Vorderflügeln wie bei *E. aurantiaca* gezeichnet; die Hinterflügel sind sehr einförmig, mit schwarzer Punktreihe an Stelle des mittleren Aussenstreifens. Unterseite des ♀ der von *E. aurantiaca* recht ähnlich, doch einförmiger, mit bedeutend schmalerer und kürzerer, weisslicher Subapikalbinde und dunkelbraunem Aussenrande der Vorderflügel. Mittelstreifen der Hinterflügel, wie überhaupt alle übrige Zeichnung derselben recht verloschen. Das ♀ steht auch der *E. fulminia* recht nahe, unterscheidet sich aber von demselben durch das Auftreten grünlicher Binden auf beiden Flügeln, sowie die ganz verschiedene Unterseite. Auch ist bei *E. oliva* die weissliche Binde der Vorderflügel im oberen Teile deutlicher und die hinter den weisslichen Punkten stehenden schwarzen Fleckchen strichförmig. "*E. oliva albata* Suffert" (l.c.) ist nur eine ganz unbedeutende Aberration von *E. oliva*.

Flügelspannung: 49 mm. (♂); 60 mm. (♀); Vorderflügelänge: 27 mm. bezw. 31 mm.

Kamerun (Barombi-Station, von Preuss, ♂), Togo (Misahöhe, 4. März 1894, von E. Baumann, ♀).

46. *Euryphura aurantiaca* Aur.

Diese Art ändert ziemlich stark ab. Bei einem ♂ von Mukenge (von Pogge) sind die Flügel sehr hell und die Zeichnungen sehr scharf ausgeprägt. Auf den Hinterflügeln ist im Diskus rötlicher Schimmer sichtbar. Die Unterseite der Flügel ist lebhaft weinrot, mit braunen Zeichnungen. Die Schrägbinde der Vorderflügel ist sehr undeutlich. Hingegen sind die weissen Flecke vor dem Vorderwinkel der letzteren, sowie dem Innenwinkel der Hinterflügel sehr gross und die weissen Punktreihen beider Flügel treten deutlich hervor.

47. *Cymothoë amphicede* Cram.

Durch Zufall gelangte die Herbst'sche Type in die Sammlung des Museums für Naturkunde. Da die Art so selten geworden ist, dass sie nicht einmal Aurivillius zu Gesicht erhielt, wird es nicht ohne Interesse sein, einige Worte über sie zu sagen. Sie steht der *C. consanguinis* Aur. am nächsten, ist aber kleiner und viel stärker gezeichnet als diese. Der Vorderrand der Vorderflügel und die Vorderrandsadern derselben sind viel breiter schwarz beschuppt. Die innere Saumbinde beider Flügel ist so stark wie bei keiner anderen verwandten Art, zusammenhängend; sie ist im oberen Teile aus starken Zacken, im unteren aus dicken Monden zusammengesetzt. Bei *C. consanguinis* ist diese Binde auf den Vorderflügeln und in der oberen Hälfte der Hinterflügel nur durch Flecke vertreten und nur im unteren Teile der Hinterflügel hängen zwei bis drei Zacken (nicht Monde) zusammen. Die äussere Zackenbinde ist tief schwarz und aus viel stärkeren Zacken zusammengesetzt als bei *C. consanguinis*. In Bezug auf die Flügelform wäre zu bemerken, dass *C. amphicede* viel zierlicher gebaut ist

als die genannte Art; besonders fällt dies an den wesentlich schlankeren Hinterflügeln auf. Die Vorderrandsadern der Hinterflügel sind in der inneren Hälfte nicht schwarz beschuppt wie bei *C. consanguinis*. Die Unterseite ist lichter als bei letzterer Art, weissgelblich. Die Zackenlinie des Diskus beider Flügel stösst fast mit der geraden Mittellinie zusammen. Hinter dieser ist braungraue Beschuppung viel ausgedehnter vorhanden als bei der genannten Art. Die schwarzen Punkte der letzteren vor dem Aussenrande sind durch schwarze Striche vertreten.

Flügelspannung: 53 mm.; Vorderflügelänge: 28 mm. (1 ♂).

Guinea.

48. *Cymothoe adelina* Hew. ♀-f. *corsandra* Druce.

Ändert sowohl in der Intensität als auch in der Ausdehnung der brannen Färbung der Flügel sehr stark ab. Entweder nimmt dieselbe die beiden ganzen inneren Drittel der Flügel ein oder ist nur auf eine mehr oder minder breite Mittelbinde beschränkt. Sie variiert von ockerbraun bis dunkelbraun. Auch die schwarze Grundfärbung ist zuweilen so dunkel, dass das Stück ein sehr verschiedenartiges, düsteres Aussehen erhält. Von den weissen Vorderrandsflecken, die Druce erwähnt, fehlt jede Spur, vielmehr ist der Vorderrand zuweilen sehr ausgedehnt verdunkelt. Auch die Unterseite ändert von hellgrau bis dunkelgrau ab.

PIERIDAE.

49. *Mylothris chloris* F. ♀-f. *infusata* nov.

Weicht vom gewöhnlichen ♀ sehr stark ab. Der Apikalteil der Vorderflügel ist ausgedehnter schwärzlich; diese Färbung ist nicht scharf abgeschnitten, sondern geht in die Grundfarbe über. Ein ziemlich breiter Vorderrandteil (die ganze Mittelzelle einnehmend) und das Basalfeld sind schwärzlich, während sie bei gewöhnlichen ♀ rein weiss sind. Hinterflügel im mittleren und äusseren Teile schwärzlichgrau. Vom Wurzelfeld ist der obere Teil gleichfalls schwärzlich, jedoch heller als der Aussenteil; der untere Teil ist weisslich, jedoch stark mit dunklen Schuppen vermengt. Bei typischen ♀ ist der ganze grössere innere Teil weiss. Sehr verschieden ist auch die Unterseite gefärbt; der innere Teil der Mittelzelle der Vorderflügel, sowie das Basalfeld der Hinterflügel sind nicht lebhaft orange gelb, sondern licht schwefelgelb, schwach grau bestreut. Apikalteil der Vorderflügelunterseite gleichfalls breiter als gewöhnlich, nach innen scharf begrenzt. Fleck auf Ader 2 stark.

Flügelspannung: 52 mm.; Vorderflügelänge: 26 mm. (♀).

West-Afrika (Edea, deutsche Endstation am Sannagah, Weiss, Verk.).

50. *Mylothris rembina* Plötz ♀-f. *fusca* nov.

Die Flügeloberseite ist ganz dunkel; nur der Innenrand der Hinterflügel ist hell, weisslich; der Innenrand der Vorderflügel ist kaum licht bestäubt. Auf der Unterseite sind die Hinterflügel nicht gelb, sondern grau, nach aussen (vor dem dunklen Rande) weisslich, grau bestäubt; nur längs des Innenraumes macht sich gelblicher Anflug bemerkbar. Auch die Vorderflügel sind trüber weiss, im Basalteile (Mittelzelle) durch dunkle Schuppen verdüstert. Fleckenbinde der Vorderflügel bis zur Ader 1 reichend.

Flügelspannung: 53 mm.; Vorderflügelänge: 28 mm. (♀).

Gaboon (coll. Maassen).

51. *Mylothris rueppelli* Koch ♀-f. *kikuyuensis* nov.

Das gelb der Vorderflügel wird durch mennigrote Färbung vertreten, die auch den basalen Teil der Hinterflügel einnimmt; der gelbe Anflug tritt auf beiden Flügeln sehr zurück. Schwarzer Apikarteil der Vorderflügel breiter, einfarbig, nicht weiss geteilt; auch die Aussenrandflecke derselben sind grösser; der unterste (auf Ader 2) ist deutlich; der oberste (auf Ader 4) hängt mit dem Apikalfeld zusammen. Unterseite der Flügel gelblich; auch hier fällt die lebhaft mennigrote Färbung des Basalteiles der Vorderflügel, sowie des Wisches am Vorderrande der Hinterflügel auf.

Flügelspannung: 49 mm.; Vorderflügelänge: 26 mm. (♀).

Brit. Ost-Afrika (Kikuyu, 11. März 1902, von E. Thomas).

52. *Mylothris phileris* B.

Ein ♂ zeichnet sich dadurch aus, dass die Hinterflügel längs des Aussenrandes gelblich angefliegen sind, sehr ausgedehnt und intensiv vor dem Analwinkel. Die Unterseite der Hinterflügel ist nicht weiss, sondern hellgelb, am intensivsten im Innenrandsfelde.

53. *Appias rhodope* F.

Das ♀ kommt sowohl in einer auf den Vorderflügeln ockergelblichen, auf den Hinterflügeln weisslichen, als auch in einer ganz weisslichen (gelblich angefliegenen) und in einer ganz schwefelgelben Form vor. Erstere Form ändert wiederum in der Intensität der ockergelblichen Färbung, die mehr oder weniger licht sein kann, ab; ferner verschwindet bei einem ♀ die schwarze Bestäubung an der Wurzel der Vorderflügel gänzlich und die ockergelben Randflecke werden kleiner. Auf der Unterseite ist die gelbe Färbung der Vorderflügel zuweilen nur auf die Basalhälfte beschränkt; der übrige Teil ist weisslich. Interessant ist eine oberseits weissliche, grünlichgelb angeflogene Form des ♀; auf der Unterseite ist sie rein weiss; die Flecke im Aussenrande der Vorderflügel sind ebenfalls grünlichgelb. Einer ganz citronengelben (unterseits etwas lichterem) Form ist schon Erwähnung gethan. Ein weiteres ♀ ist beiderseits auf den Hinterflügeln hell gelblich, auf den Vorderflügeln weiss, mit gelben Flecken am schwärzlichen Rande der Oberseite; bei diesem ♀ ist auch unten auf den Vorderflügeln eine Reihe schwarzer Flecke vor dem Rande vorhanden. Eine ♂ Form, bei der die orangerote Färbung auf der Oberseite der Vorderflügel bis über die Mitte der Zelle reicht, benennt Suffert (*Iris* xvii. 1904. p. 76) als "*rhodope dopero*."

54. *Appias phaeola* Doubl. ♀-f. *ochrea* nov.

Während das ♀ der Stammform oberseits ganz weiss und nur in der Mittelzelle der Vorderflügel bräunlich gefärbt ist, zeichnet sich die neue Form durch ganz hell ockergelbliche Vorderflügel aus. Hinterflügel nicht weiss, sondern schmutzig grau, gelblich angefliegen und schwärzlich bestäubt; zwischen den Saumflecken gelb gefleckt. Auch die Unterseite der Vorderflügel ist ganz gelb; Mittelzelle derselben ebenso wie Vorderrand der Hinterflügel lebhaft goldgelb,

nicht mennigrötlich. Letztere denen der Stammform ähnlicher als die Vorderflügel, doch mit stärker hervortretenden gelben Tönen.

Flügelspannung : 52 mm. ; Vorderflügelänge : 29 mm. (♀).

Togo (Misahöhe, 11. Mai 1895, von E. Baumann).

55. *Appias epaphia* Cr.

Die weibliche Form *albida* Mab. kommt auch im kontinentalen Afrika vor, z. B. Nyassa-See (Langenburg, 23. Juli 1898 von Fülleborn). Zur *flavida* Mab. kommen Übergänge vor und wird ein solches Exemplar von Mabilie abgebildet (t. 36. f. 7). Das Berliner Museum besitzt ein Exemplar von Mikindani (von Reimer).

56. *Pieris cebron* Ward.

Ein ♂ aus Süd-Kamerun (Bipindi, von G. Zenker) weicht in mancher Hinsicht ab. Der schwarze Aussenrand der Vorderflügel und die gleichfarbigen Randflecke der Hinterflügel sind sehr stark verschmälert. Auch die citronengelbe Färbung ist eingeschränkt, so an der Basis der Vorderflügel, ganz besonders aber auch auf den Hinterflügeln, wo diese Färbung scharf abgeschnitten ist (nicht in die Grundfarbe übergeht); sie dehnt sich hier nur bis zur Ader 2 aus und nimmt nur das innere Drittel der Mittelzelle ein. Auch der Vorderrand und das Apikalfeld der Vorderflügelunterseite sind weniger gelb; die rote Färbung am Vorderrande der Hinterflügel ist unten etwas ausgedehnter.

Flügelspannung : 52 mm. ; Vorderflügelänge : 28 mm (♂).

57. *Teracolus lanzi* nov. sp.

T. hildebrandti Lanz (non Stgr.), *Iris* ix. p. 128, 129 (1896).

Nach dem Material des Berliner Museums ist dies eine von *T. hildebrandti* verschiedene Art. Obwohl sie von Lanz bereits gut kenntlich gemacht wurde, so sei mir ein nochmaliges Hervorheben der Unterschiede, besonders der des noch unbeschriebenen ♀, von *T. hildebrandti* gestattet. Das ♂ hat ganz weisse Grundfarbe der Flügel; die Basis ist nur ganz schwach grau bestäubt, ebenso der Vorderrand der Vorderflügel, welcher letzterer zuweilen ganz licht erscheint. Mittelpunkt der letzteren deutlich schwarz, zuweilen verloschen. Der grosse ockerlehmgelbliche Fleck wird nach aussen und oben nur sehr fein begrenzt; nach innen ist der Rand nie so breit wie bei *T. hildebrandti*; besonders erweitert er sich vor dem Innenwinkel nie so stark; meist endigt er bereits in der Mitte der Zelle 1b. Zuweilen weist dieser grosse Apikalfleck einen deutlichen rötlich-violetten Schimmer auf. Hinterflügel nicht mit breitem schwarzen Rande, sondern nur mit kleinen schwarzen Flecken an den Adern, denen einwärts auch keine schwärzliche Bestäubung vorangeht. Ebenso sind auch die Adern des Saumfeldes nicht schwarz beschuppt. Am Vorderrande steht nur ein sehr verloschenes, selten etwas deutlicheres, zuweilen fehlendes, schwärzliches Fleckchen. Sonst fehlt auf den Hinterflügeln jede Zeichnung vollständig; nur die Flecke der Unterseite scheinen schwach durch. Fransen rötlich, im unteren Teile der Vorderflügel und in den beiden oberen Dritteln der Hinterflügel weisslich. Unterseite der Vorderflügel weiss, im Basalfelde nicht dunkelgrau und ohne schwärzliche Binde dahinter. Mittelfleck klein, schwarz. Apikalteil der Vorderflügel und die ganzen Hin

flügel chamoisfarben, fein braun besprenkelt, ersteres nach innen gelblich. Da wo beide Färbungen in einander übergehen, steht auf den Vorderflügeln eine Reihe brauner, bronzefarbig glänzender Flecke, die (ebenso wie der Mittelpunkt) auf der Oberseite hindurchschimmern. Adern des Aussenteils (auch auf den Hinterflügeln) nie schwarz, ebenso fehlen die schwarzen Randflecke vollständig. Mittelfleck der Hinterflügel ganz verschieden von dem von *T. hildebrandti*, halb mondformig, silberglänzend, fein dunkel gerandet. Hinter der Mitte verläuft eine gleichfarbige, meist aus 5 deutlichen und 2 (—3) kleinen Flecken zusammengesetzte Reihe. An den Einmündungen der Adern treten feine dunkle Fleckchen auf. Der Mittelmond der Hinterflügel ist bei einem ♂ gelb gekernt; in den Zellen 14 und 2 der Vorderflügel stehen zuweilen noch zwei verloschene kleine Flecke (als Fortsetzung der Fleckenreihe). Vorderrand der Hinterflügel unten nur sehr fein gelb. Kopf nebst Palpen, Halskragen, Schulterdecken, Brust und Beine meist rötlich behaart.

Sehr abweichend ist auch das ♀ von *T. hildebrandti* ♀. Auf der Oberseite der Flügel ist die dunkle Zeichnung nicht schwärzlich, sondern schwärzlichgran, im Basalfelde beider Flügel stark weisslich bestreut. Mittelteil beider Flügel nicht gelb, sondern rein weiss. Die Wische im Apikal- (Aussen)-Teil der Vorderflügel sind länger und nicht gelb, sondern hellrot. Der grosse Fleck in Zelle 16 der Vorderflügel ist kleiner, und hängt nicht mit dem Ausseurande zusammen. Innenrand derselben hinter der Mitte bis kurz vor dem Analwinkel weiss (nicht schwarz). Fleckenreihe der Hinterflügel viel kleiner, nach unten zu verloschen; die schwärzliche Aussenrandsbinde ist schmaler und heller; die weissen Randflecken in der Zellen 2—6 sind erweitert; Adern des Aussenteiles nicht so scharf schwarz. Unterseits ist das ♀ auf den Vorderflügeln nicht so lebhaft, sonst dem *T. hildebrandti* ♀ ähnlich gefärbt und gezeichnet. Die Flecke auf Ader 1—3 am Rande sind vorhanden, die übrigen Adern sind nach aussen nicht schwarz. Der Subapikalfleck ist gelb, nach aussen hell gelblich. Hinterflügel unten weisslich, mit gelbem, schwärzlich gerandetem Mittelflecke und messinggelber, braun bestreuter Fleckenreihe hinter der Mitte; ihr Verlauf ist wie bei *T. hildebrandti*; doch sind die Flecke stärker von einander getrennt. Adern im Aussenfelde nicht stark schwarz. Der Basalteil hebt sich etwas dunkler, grau, ab. Brust weiss. Auch auf der Unterseite ist das ♀ von *T. hildebrandti* (das hier fast ganz gelbe Hinterflügel hat) sehr verschieden, die Unterschiede von der letzteren sind so bedeutend und bleiben sich bei allen Stücken so gleich, dass es ausgeschlossen ist, das *T. lanzi* eine Form von *T. hildebrandti* sein könnte.

Flügel spannung: 42—52 mm.; Vorderflügelänge: 22—27 mm. (9 ♂♂); beim einzigen ♀ 46 bzw. 24 mm.

N.-Nyassa-See (Langenburg, 24.—25. Mai 1899, 1 ♂; 18. Juni 1899, 2 ♂♂ von Fülleborn; Usafua, Beya-Berg—Songwe Fluss, 7. Juli 1899, 2 ♂♂, 8. Juli 1899, 1 ♂, 14. Juli 1899, 1 ♂, von Goetze); Ost-Afrika (Ubena Langenburg, April 1899, 2 ♂♂, von Goetze; Südl. Uhehe, Iringa-Myololo, März 1899, 1 ♀, von Goetze).

ON NORTH AMERICAN *CERATOPHYLLUS*, A GENUS OF SIPHONAPTERA.

BY THE HON. N. C. ROTHSCCHILD, M.A., F.L.S.

(Plates VI. VII. VIII. IX.)

OUR large material of *Ceratophyllus* from North America, especially British Columbia and Alberta, has been left practically untouched, since we knew that Mr. Carl Baker was working at a revision of the Nearctic Siphonaptera. After the receipt of Mr. Baker's paper on this subject we have compared the species in our possession, and give now the descriptions of those which we think are undescribed. The identification of the species is not always easy, the insects being sometimes very closely related to each other, but we hope not to have made very glaring mistakes in the identification of Mr. Carl Baker's species, as that author has been kind enough to give us some cotypes, which have been of very great help.

The genus *Ceratophyllus*, as it now stands, will ultimately have to be divided up into several genera; but we think with Mr. Baker that a generic classification of the Siphonaptera should not be attempted without comparison of a large number of species from all faunistic regions. For the purpose of identification the Nearctic *Ceratophyllus* can conveniently be separated into three groups:

I. *Hindeoxa* without comb of short teeth on inner side; second hindtarsal segment with a long apical bristle which reaches beyond apex of fourth segment. Here belong species Nos. 1—5.

II. *Hindeoxa* without comb; longest apical bristle of second hindtarsal segment hardly reaching apex of third segment, seldom extending a little beyond this segment. Here belong species Nos. 6—15.

III. *Hindeoxa* with comb. Here belong species Nos. 16 and 17.

1. *Ceratophyllus telchinum* spec. nov. (Pl. VIII. fig. 21).

Head.—The eye-bristles stand in a straight row, the middle one being half-way between the others. The row in front of the eye-bristles consists of three shorter ones, there being an additional bristle higher up at the antennal groove. There are numerous short hairs from the eye upwards. The frontal tubercle is distinct. On the hinder part of the head there are about six short hairs along the antennal groove, and above them one bristle behind the base of the antennal groove and a longer one in the middle, the latter bristle being accompanied by a shorter one standing obliquely above it. The distance from the long ventral bristle of the subapical pair to the second bristle is larger than from the second to the third. The rostrum reaches a little beyond the trochanter, the last segment being twice the length of the preceding one.

Thorax.—The pronotal comb consists of sixteen to eighteen spines. The mesonotum has a row of small hairs laterally at the base, these hairs being more numerous on the back, where they form several short irregular rows. There are two rows of bristles on the meso- and metanotum, and between these rows, as well

as in front of them, there are dorsally on each side several other long bristles which give the insect the appearance of having a mane. A similar arrangement of bristles is found on the first abdominal tergite. The mesonotum bears four or five long slender spines on each side before the apex, while the metanotum bears one very small apical spine. The episternum of the metathorax bears one or two bristles, and the epimerum six (2.3.1.).

Abdomen.—The tergites 1 to 4 have one or two apical spines on each side. There are two rows of bristles on tergites 2 to 7, the anterior row not consisting of more than six on segments 4 to 7. The seventh tergite bears one long apical bristle, accompanied on each side by a small hair. The sternites of segments 3 to 7 bear two bristles on each side. In some of the specimens these bristles are accompanied by a small hair on the sixth and seventh sternites.

Legs.—The hindcoxa does not bear any hairs on the inner surface from the base to the middle, apart from those standing at the anterior edge. There are two bristles posteriorly at the apex of the hindcoxa, the second being much thinner and shorter than the first. There is one short bristle on the outer side of the hindfemur near the base. The hindtibia bears on the outer surface two rows of bristles. The longer bristle of the dorsal subapical pair is as long as the tibia is broad. The tarsal segments have two rows of bristles on the ventral surface, the row standing towards the frontal side of the insect having less bristles than the hinder one. The hindtarsus is very characteristic. One bristle of each of the last three posterior pairs is very thin and much prolonged, that of the apical pair reaching to the middle of the fourth segment. One bristle of the apical anterior pair, again, is long and stout, reaching nearly to the apex of the third segment. The longer anterior apical bristle reaches nearly to the apex of the fourth segment, while the corresponding bristle of the posterior side reaches to the base of that segment. The first pair of lateral bristles of the fifth segment is distinctly dislocated towards the middle, standing halfway between the second pair and the base. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus	40	19	12	8	15
Hindtarsus	16	13	9	7	13

Modified Segments.—♂. The eighth tergite is large, and bears behind the stigma a patch of hairs, and farther back six or seven long bristles. The eighth sternite is very small, being almost concealed in the seventh. The process of the clasper (Pl. VIII. fig. 21, r) is short and rounded, bearing three bristles at the apex and two long bristles at the juncture with the finger. The manubrium (m) is short and broad, being rather abruptly pointed. The finger (f) is broad, being almost oblong, bearing close to the distal edge one stout bristle at the lower corner, a longer one at the upper corner, and between them three short stout spine-like bristles. The ninth sternite (Pl. VIII. fig. 21) bears a patch of long thin bristles proximally of the sinus.

Length : ♂, 1.8 mm.

The mane of the thorax and of the first abdominal tergite, the hairs of the hindtarsus, and the distinctive clasping organs are characters by which this species can be recognised.

We have two ♂♂ collected by Mr. G. F. Dippie, as follows :—

1 ♂, Kicking Horse Canyon, B. C., October 1st, 1903. *Eratomys gapperi*.
1 ♂, " " " " " 5th, " *Sorex richardsoni*.

2. *Ceratophyllus poeantis* spec. nov. (Pl. VII. figs. 22, 23).

This species is allied to *C. proximus* Baker, of which only *females* are known. It differs in that sex (according to Baker's figure and a cotype) in having the last segment of the rostrum longer than the preceding one, and in the second hair of the subapical row of the occiput being nearer to the dorsal edge of the head than to the long ventral bristle. Further, the row of three or four hairs on the outer side of the hindfemur of *C. poeantis* stands widely apart from the subventral apical hair. Other slight differences between these two insects also exist.

Head.—There is a distinct frontal notch. Of the three eye-bristles the second is the smallest, standing close to the upper one, but placed a little in front of it. The anterior row of bristles is represented by one bristle at the ventral edge behind the palpi, another two-thirds the way towards the antennal groove, and a third smaller one further back, the last two being generally absent from the ♀. The interspace between the long subapical ventral bristle of the hinder part of the head and the second bristle is very large, the second bristle standing much nearer the dorsal edge than the ventral corner, being, in fact, homologous to the third bristle of *proximus*, the true second bristle being absent from *poeantis*. The rostrum reaches beyond the trochanter, the fifth segment being longer than the fourth.

Thorax.—The pronotal comb consists of from eighteen to twenty spines. The mesonotum possesses in the ♂ three or four irregular rows of very short hairs at the base, while the ♀ has two almost regular rows of similar hairs. There are six thin, long, subapical spines on each side. The mesothoracal episternum bears one long and several small hairs. On the metanotum there are two to four apical spines on the two sides together. The metathoracal episternum bears three bristles, the sternum one, and the epimerum four (1.2.1.).

Abdomen.—There are two rows of bristles on all the tergites, and segments 1 to 4 bear, moreover, two apical spines on each side. The seventh tergite bears one long apical bristle in the ♂, with a short one above it, and in the ♀ three bristles, of which the ventral one is at least two-thirds the length of the middle one. There is occasionally a fourth bristle above and a fifth below the three, these additional ones not standing on cones. The sternites of segments 3 to 7 bear in the ♂ three or four long bristles, with a few shorter ones in front, while in the ♀ there are four to six bristles on segments 3 to 6, and seven or eight on segment 7, with numerous small ones situated before them.

Legs.—The legs are as in *proximus*. The hindfemur, however, possesses on the outer side a row of three or four bristles from the base to the middle, there being a wide interspace between the last bristle of this row and the ventral subapical bristle. The hindtibia has one lateral row of bristles standing near the dorsal pairs. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	18	18	13	10	20
Hindtarsus . . .	46	28	19	13	20

Modified Segments.—♂. The eighth sternite is short, finger-like, and bears from three to six very long bristles at the apex and often some small hairs proximally of them (Pl. VIII. fig. 23, viii. st.). The process of the clasper is triangular, being short and broad. The finger has an almost evenly rounded distal margin. It bears one long hair above the middle and three shorter ones farther down, besides a number of small ones, as shown in the figure (Pl. VIII. fig. 23). The two hairs at the junction with the clasper stand rather widely apart from one another. The manubrium is curved upwards at the end and sharply pointed.

♀. The seventh sternite of the ♀ is truncate, being very feebly emarginate. The bristles of the eighth tergite are distributed as shown in the figure (Pl. VIII. fig. 22).

Length: ♂, 2.8 mm.; ♀, 3.1 to 3.4 mm.

We have a large series of this species from:—

- 1 ♂, Banff, Alberta, Canada, July 9th, 1899. Mountain Chipmunk. (G. F. Dippie.)
 2 ♀ ♀, " " " " " " " "
 2 ♂ ♂, " " " " 13th, " " " "
 1 ♂, " " " Aug. 26th, " Says' Mountain Chipmunk. "
 1 ♀, " " " " " " " "
 2 ♂ ♂, " " " July 5th, " Mountain Gopher. "
 2 ♀ ♀, " " " " " " " "
 2 ♀ ♀, " " " " 28th, " *Spermophilus columbianus*. "
 1 ♂, Canadian National Park, Alberta, Aug. 16th, 1899. (G. F. Dippie.)
 1 ♂, Alberta, Canada, Oct. 21st, 1900. *Putorius longicaudatus*. "
 1 ♀, " " " " " " " "
 1 ♂, San Francisco, Mts. Flagstaff, Arizona, July 26th, 1897. *Sciurus aberti*.
 (Dr. Kunze.)
 4 ♀ ♀, San Francisco, Mts. Flagstaff, Arizona, July 26th, 1897. *Sciurus aberti*.
 (Dr. Kunze.)
 5 ♂ ♂, Golden, B. C., June 18th, 1902. Yellow-bellied Marmot. (W. Wenmann.)
 4 ♀ ♀, " " " " " " " "

3. *Ceratophyllus acamantis* spec. nov. (Pl. VIII. figs. 24, 25).

Head.—There is a distinct frontal tubercle. The eye-row consists of three bristles, of which the upper two stand close together, the second being sometimes replaced by a small hair. Anterior to this row there is one bristle at the oral edge, and in most *males* a hair at the antennal groove. On the hinder part of the head there is only one lateral bristle besides the subapical row, the bristle standing in the middle above the antennal groove. The rostrum is very long, reaching to the apex of the anterior femur.

Thorax.—The pronotal comb consists of eighteen to twenty spines. The mesonotum bears laterally at the base one row of minute hairs (these hairs being much more numerous on the back), and has on each side a row of six or seven slender subapical spines. The metanotum bears, like the mesonotum, two rows of bristles, the first row containing less than ten on the two sides together. There are two apical spines on each side. The metathoracical episternum bears three bristles, seldom four, while the sternite possesses only one. On the epimerum there are three or four bristles.

Abdomen.—There are two rows of bristles on each tergite. Tergites 1 to 4 have

two spines or one spine on each side. On the seventh tergite there is in the ♂ one long apical bristle, and above it a small hair, while in the ♀ there are three bristles, of which the lower one is at least two-thirds the length of the middle one. The first sternite bears in the ♂ a few extremely small hairs on the side, and in the ♀ one or two longer ones in addition, besides a ventral pair. The sternites of the third to seventh segments have two or three bristles on each side in the ♂, and a few small hairs in front of them. In the ♀ there are six or seven bristles on the sternites of the fifth and seventh segments, while the sternites of segments 4 and 6 bear five bristles, exclusive of some smaller hairs standing in front of them.

Legs.—The hindcoxa is about one-fifth longer at the meral suture than it is broad. The hairy area of the inner side extends to the base. The hindfemur has one subapical bristle, and on the inner side a lateral row of eight or nine in the ♂ and eleven or twelve in the ♀. The hindtibia bears on the outer side a lateral row of six or seven bristles, and on the inner side a row of six or eight. The dorsal bristles are partly very long, the longer one of the subapical pair being about twice as long as the tibia is broad. The tarsal segments have very few bristles on the ventral surface. The longest apical lateral bristle of the first hindtarsal segment reaches beyond the apex of the second segment. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment	Third segment.	Fourth segment.	Fifth segment.
Midtarsus	18	18	13	10	23
Hindtarsus	46	28	19	13	24

Modified Segments.—♂. The eighth tergite is very large; it bears a patch of about ten bristles below the stigma, and numerous long bristles at and near the ventral edge (Pl. VIII. fig. 25). The eighth sternite is small, long, and canoe-shaped, and has many long bristles ventrally at and before the apex. The process of the clasper is broad and rounded, being longer than the finger. It possesses two small hairs at the apex and two long bristles at the juncture with the finger, there being below these two or more short bristles (Pl. VIII. fig. 25, r). The finger is long and pointed, its proximal edge being nearly straight, while the distal edge is evenly curved (Pl. VIII. fig. 25, r). It bears two long and several short bristles, as shown in the figure. The manubrium (m) is curved downwards at the apex. The ninth sternite bears proximally of the sinus two bristles, and further towards the base two flat, pointed, modified bristles, which somewhat resemble the blade of a knife.

♀. The seventh sternite is very slightly sinuate below the upper angle. The upper angle of the eighth tergite (Pl. VIII. fig. 24) is acute. There are two bristles below the stigma and three at and near the apical edge of the eighth tergite. Proximally of these three there are some spine-like bristles, and further towards the base about twelve more bristles, as shown in the figure. The stylet is not more than three times as long as it is broad. At the angle of the anal tergite below the insertion of the stylet there are one long and several short bristles.

Length: ♂, 2.8 mm.; ♀, 3.08 mm.

The sexual organs of the ♂ of this species are quite different from those of *C. montanus* Baker; the ♀, moreover, can be distinguished from that sex of *montanus* by the seventh tergite possessing three apical bristles, and by the length

of the dorsal bristles of the hindtibia and the apical bristles of the hindtarsal segments.

We have a large series of this insect, as follows :—

9 ♂♂, Okanagan, B. C., April 17th, 1902. *Mephitis spissigrada*. (Allan Brooks.)

6 ♀♀, " " " " " " " " " " " "

10 ♂♂, " " March 25th, 1902. *Arctomys flaviventer ararus*. (Allan Brooks.)

5 ♀♀, Okanagan, B. C., March 25th, 1902. *Arctomys flaviventer ararus*. (Allan Brooks.)

1 ♀, Sumas, B.C., March 1903. *Putorius energumenos*. (Allan Brooks.)

1 ♀, Eagle River, Sicamous, September 6th, 1903. *Canis latrans*. (G. F. Dippie.)

4. *Ceratophyllus terinus* spec. nov.

(Pl. VIII. fig. 26 ; IX. fig. 29).

A very pale species, allied to *C. divisus* Baker, but differing in having a very much shorter rostrum. It is distinguished, moreover, by the complete fusion of the metathoracical episternum with the sternum, and of the epimerum with the notum, as well as by other characters pointed out below.

Only the ♀ is known.

Head.—The acute frontal tubercle is situated in a groove. The vestigial eye is nearly horizontal, being halfmoon-shaped. There is a row of four bristles across the eye, and another row of four immediately in front of it. The hinder part of the head bears one bristle behind the base of the antennal groove, and two or three in the middle. There is one long bristle near the ventral posterior angle, not two as in *C. ignotus*. The rostrum is shorter than the forecoxa.

Thorax.—The pronotum has a comb of eighteen to twenty spines. The thoracical tergites bear one row of bristles only. The mesonotum has, moreover, a very few minute hairs at the base, and three or four hair-like spines before the apex. There are one or two bristles on the mesosternum. The metathorax is very characteristic of this species (Pl. IX. fig. 29). The metanotum has no apical spine. The metathoracic episternum is completely fused with the sternum, the suture being absent. The portion of the plate thus formed which corresponds to the episternum is narrow. There are no bristles on this plate. The metathoracic epimerum is fused with the notum ; but here the suture between the two plates is vestigial in front and behind. The epimerum bears five bristles (1.3.1.), sometimes six.

Abdomen.—There is only one row of bristles on the abdominal tergites. The first tergite bears four or three apical spines on each side, the second one, the third also one or no spine. On the seventh tergite there are three apical bristles, of which the ventral one is two-thirds the length of the middle one. The basal sternite is without hairs, while the following four sternites bear three or four, and the sternite of the seventh segment five, on each side.

Legs.—The hindcoxa is rounded, its width being about three-fourths the length of the meral suture. There are hardly any hairs on the hindcoxa, except at the apex and at the anterior edge from the apex to the middle. Posteriorly at the apex there are two bristles standing very widely apart. There are no hairs on the lateral surfaces of the femora. The hindtibia has six dorsal incisions, the apical

one included, and bears on the outside a row of five hairs, the inside being devoid of hairs. The longer bristle of the subapical dorsal pair is as long as, or shorter than, the tibia is broad. The longest dorsal apical bristle of the midtibia reaches beyond the second tarsal segment. The tarsi have scarcely any hairs on the ventral surface. The first segment of the midtarsus is longer than the second. The longest apical bristle of the first hindtarsal segment reaches to the apex of the second, while that of the second segment extends to the claw. The fourth hindtarsal segment is a little longer than it is broad, and the fifth is shorter than the second. The first pair of bristles of the fifth tarsal segment is quite ventral, standing in between the second pair. The measurements of the mid- and hindtarsi are as follows : --

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	10	8	7	6	11
Hindtarsus . . .	32	18	9	7	13

Modified Segments.—The apex of the seventh sternite is slanting and feebly emarginate. The eighth tergite bears no bristles above the stigma and only one below it, there being a patch of bristles ventrally at the apex (Pl. VIII. fig. 26). The eighth sternite is sharply pointed, bearing a few extremely small hairs at the apex. The anal tergite has comparatively few bristles, which are slender, there being no spine-like ones as in most other species. The stylet is feebly curved downwards at the base.

Length : ♀, 2.4 mm.

We have three ♀♀ of this insect from Mabel Lake, B. C., May 6th, 1902, from *Spermophilus columbianus*, collected by Mr. Allan Brooks.

The fusion of the metathoracic notum with the epimerum, and of the sternum with the episternum, is a peculiar character which this species shares with *C. divisus* Baker. In the latter species, however, the fusion is not so far advanced, the episternal suture being indicated and there being a bristle present on the piece thus imperfectly separated from the sternum. The vestige of the suture between the notum and the epimerum is also more distinct in *divisus*. In *C. ignotus* Baker, which agrees with *divisus* and the new species in having the eye vestigial, no such fusion in the metathorax has taken place.

5. *Ceratophyllus bacchi* spec. nov. (Pl. IX. fig. 34).

We know only the ♂ of this species.

Head.—The frontal tubercle is distinct. There are a row of three bristles and some minute hairs in front of the eye, and before that row one bristle at the oral edge and another at the antennal groove. The hinder part of the head bears a row of eight or nine short hairs above the antennal groove and a single lateral bristle before the middle. The second bristle of the subapical row is reduced to a small hair. The rostrum reaches to the base of the femur, the last segment being not quite twice the length of the last but one.

Thorax.—The pronotum bears a comb of sixteen or seventeen spines. The

mesonotum has two rows of bristles and, at the base, two irregular rows of very short hairs, the back being provided, moreover, with a number of short hairs from the base to the first row of bristles. There are five or six long thin subapical spines on each side. The metanotum bears two rows of bristles, and dorsally in front of them two or three additional hairs. It has one spine at the apex. The episternum of the metathorax bears two or three bristles and the sternum one or two, while there are three or five bristles on the epimerum (1.1.1., or 2.2.1.).

Abdomen.—The abdominal tergites have each two rows of bristles, the anterior row of the fifth and sixth segments not containing more than six bristles on the two sides together. The first three tergites bear each one apical spine, the second having sometimes two. There is one long apical bristle on the seventh tergite, accompanied by two short hairs. The first sternite bears one hair on each side, while the sternites of segments 3 to 7 have three.

Legs.—The hindfemur bears on the inner side a row of about eight hairs. The hindtibiae have on the outer side one row of hairs, and several additional hairs between this row and the dorsal edge. The longer bristles of the second, fifth and last dorsal pairs of hairs of the hindtibiae are long, while all the other dorsal bristles are short. There are very few hairs on the ventral side of the tarsi. The first hindtarsal segment is very long, being about two-thirds the length of the hindtibia. Its bristles are short, except one of the penultimate posterior pair and the posterior apical one, the latter reaching to the apex of the fourth segment. The corresponding bristles of the second segment are also long, the apical one reaching to the middle of the fifth segment, the apical bristle on the anterior side of the segment being nearly the same length. The bristles of the fifth segment are all lateral, the third pair being, however, somewhat dislocated towards the middle, as is the case in most species. The measurements of the mid- and hind-tarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus	15	15	11	8	17
Hindtarsus	46	21	15	10	19

Modified Segments.—♂. The eighth tergite is broadly emarginate distally, bearing four or five bristles near the upper angle and five or six near the ventral angle. The eighth sternite is rather large and bears a patch of hairs at the apex. The process of the clasper (Pl. IX. fig. 34, p) is rounded, bearing a few hairs at the apex and two bristles at the juncture with the finger. The latter is rounded, club-shaped, bearing one long bristle at the distal edge near the apex and five shorter ones, as shown in the figure (Pl. IX. fig. 34, r). The ninth sternite (ix. st.) bears on each side two long broad sabre-shaped bristles proximally of the sinns, besides some small hairs.

Length : ♂, 2.5 mm.

We have six specimens of this species, collected by Mr. G. F. Dippie, as follows :—

3 ♂♂, Red Deer, Alberta, Canada, April 20th, 1901. *Spermophilus 13-lineatus*.
 3 ♂♂, " " " May 9th, " " "

6. *Ceratophyllus eumolpi* spec. nov. (Pl. VI. fig. 2, 3, 4).

Head.—The head bears a small frontal tubercle. In front of the three eye-bristles there is in the *male* a further row of four hairs, continued upwards at the antennal groove by two more bristles. The anterior row is present also in the *female*, but some of the bristles are much reduced in size. There are, moreover, several small hairs in front of the eye and along the antennal groove. The occiput bears one bristle behind the base of the antennal groove, and two in the centre. Below this long subapical ventral bristle there is a rather long hair at the ventral corner of the head. The rostrum reaches beyond the apex of the trochanter, the last segment being twice the length of the last but one.

Thorax.—The pronotal comb consists of eighteen spines. The small hairs of the pronotal row are posterior in position to the long bristles. The mesonotum bears two rows of bristles, besides numerous small hairs found on the back and halfway down the sides. There are five hair-like subapical spines on each side. The mesothoracal episternum bears numerous small hairs from the upper corner downwards. On the metanotum there are two rows of bristles, and some additional hairs forming an abbreviated third row. There is one apical spine. The metathoracal epimerum bears six bristles (2.3.1.), occasionally with a single small hair placed above the basal pair and another behind the stigma.

Abdomen.—There are two rows of bristles on the tergites, with one or two bristles in front of them, the anterior row not extending down to the stigma on the seventh segment. This segment bears in the *male* one long apical bristle with a minute hair above and below it, and in the *female* three bristles of which the lower one is about half the length of the middle one. The first tergite bears one or two apical spines on each side, the second two or three, the third one or two, the fourth one or none. On the basal sternite there are one or two bristles, and towards the base some extremely small hairs. The next four sternites bear in the *male* two or three, and in the *female* three or four bristles, besides a number of small hairs before them, these hairs being more numerous in the *female* than in the *male*. The seventh sternite bears in the *male* four bristles, with about four shorter ones in front, while in the *female* there are five to seven bristles and about twelve shorter ones. On the sternites of segments 3 to 7 there is generally a number of very minute hairs near the upper bristles.

Legs.—On the outer side of the forefemur there are about ten small hairs. The hindfemur bears, besides the subventral apical bristle, one or two on the outer surface and four on the inner side. The mid- and hindtibiae bear two rows of hairs on the outer side, the hindtibia having on the inner side a row of from seven to nine. The fifth and subapical pairs of dorsal bristles of the hindtibia stand widely separate, with one or two small hairs in between. The midtarsus of the *male* is characteristic. The first segment, which is a little longer than the second, bears on the hinder side a number of very long thin bristles (Pl. VI. fig. 4), the longest apical one reaching beyond the middle of the third segment. The second segment has also some long thin bristles, the longest reaching to the fourth segment. In the *female* the bristles are normal. The longest posterior apical bristle of the first hindtarsal segment reaches in both sexes nearly to the apex of the second segment, the longest apical anterior bristle of the second segment extending to the apex of the third. The fourth segment of the hindtarsus is nearly twice as long as it is broad. The first lateral pair of bristles of the fifth tarsal segment is placed somewhat towards the

middle, remaining, however, proximal in position to the second pair. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus, ♂ . .	19	17	11	7	16
" ♀ . .	24	29	12	8	17
Hindtarsus, ♂ . .	39	27	17	10	17
" ♀ . .	45	28	17	10	19

Modified Segments.—♂. The eighth tergite has about ten long bristles in the dorsal half and a nearly vertical row of three proximally from near the ventral edge upwards. The eighth sternite is long, narrow, and rod-like, bearing at the apex two long bristles and a number of shorter ones further back (Pl. VI. fig. 3). The finger is long, bearing three blunt spines, and above them a bristle as shown in the figure, another bristle standing at the upper edge near the proximal angle (Pl. VI. fig. 3). The proximal portion of the ninth sternite (ix. st.) is short and rather narrow, bearing two bristles near the sinus, one short spine-like one beyond them, and about fourteen hairs proximally of them. The distal portion of the ninth sternite is long and large, bearing proximally at the ventral edge numerous short bristles, the ventral portion being moreover sinuate near the apex.

♀. The seventh sternite is truncate, with the upper angle produced as a broad rounded lobe (Pl. VI. fig. 2). The eighth tergite bears three bristles at the apex and three short spine-like ones proximally of them, besides a number of short and long bristles as shown in the figure (Pl. VI. fig. 2). The stylet is about twice as long as it is broad. The spine-like bristles on the anal sternite are heavy and curved.

Length : ♂, 2.3 mm. ; ♀, 2.8 mm.

We have a large series of this species, as follows :—

4 ♂♂, Banff, Alberta, August 8th, 1899. *Tamias borealis*. (G. F. Dippie.)

4 ♀♀, " " " " " "

2 ♂♂, " " July 22nd, " " "

4 ♀♀, " " " " " "

3 ♂♂, Red Deer, Alberta, May 5th, 1901. " " "

6 ♀♀, " " " " " "

8 ♂♂, " " " " 10th, " " "

11 ♀♀, " " " " " " "

3 ♂♂, Canadian National Park, Alberta, August 3rd, 1899. *Tamias borealis*. (G. F. Dippie.)

4 ♀♀, Canadian National Park, Alberta, August 3rd, 1899. *Tamias borealis*. (G. F. Dippie.)

3 ♂♂, Hospital Creek, near Golden, B. C., May 31st, 1902. (Chipmunk. (W. Wenmann.)

6 ♀♀, Hospital Creek, near Golden, B. C., May 31st, 1902. (Chipmunk. (W. Wenmann.)

1 ♀, Okanagan, B. C., April 12th, 1902. *Eutamias quadricittatus affinis*. (Allan Brooks.)

3 ♂♂, Okanagan, B. C., April 22nd, 1902. Picked up in dust at bottom of pine tree. (Allan Brooks.)

5 ♀♀, Okanagan, B. C., April 22nd, 1902. Picked up in dust at bottom of one tree. (Allan Brooks.)

7. *Ceratophyllus quirini* spec. nov. (Pl. VI. fig. 1).

In the ♂ of this species—we do not know the ♀—the first midtarsal segment is long, and hairy as in *eumolpi*.

Head.—The head is similar to that of *eumolpi*, but the anterior row of bristles on the frontal part is represented only by some minute hairs. The hair at the posterior ventral corner of the occiput standing below the long ventral bristle of the subapical row is short. The rostrum is also shorter than in *eumolpi*.

Thorax.—The hairs in front of the two rows of bristles on the meso- and metanotum are fewer in number than in *eumolpi*. The mesonotum bears two or three hair-like subapical spines on each side. The sternum of the mesothorax has only two or three small hairs. The subapical bristle of the metathoracical episternum is absent (in our only specimen).

Abdomen.—The anterior row of bristles of the tergites contains fewer bristles than in *eumolpi*, the row not extending down to the stigma. The lateral bristles are widely separate and minute. The spines on the first three tergites are two, one, and one on each side. On the seventh tergite the dorsal bristles of the posterior row stand close together, and are nearer the apex of the segment than is usually the case. The long apical bristle is accompanied by one minute hair standing above it. There are no bristles on the first two sternites, but some minute pale dots—the points of insertion of extremely small hairs—similar dots being found also on the other sternites. The sternites of segments 4 to 6 bear one bristle, while that of the seventh segment bears one or two bristles, with one hair placed in front.

Legs.—The forefemur has about six small hairs on the outer side. On the hindfemur there is no lateral hair on the outer side, while on the inner side there is one near the base, followed by one or two short ones further back. The mid- and hindtibiae bear two rows of bristles on the outer side, the hindtibia having on the inner surface a row of three or four. The third dorsal pair of bristles of the hindtibia is represented by two small hairs. The first midtarsal segment bears several long thin bristles on the hinder side, the longest apical bristle extending beyond the middle of the third segment. The bristles of the second segment are normal, the longest apical one reaching only beyond the middle of the fourth segment. The hindtarsus is similar to that of *eumolpi*, but the longest apical bristle of the anterior side is shorter. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	16	13	9	7	13
Hindtarsus . . .	35	22	13	8	15

Modified Segments.—♂. The eighth tergite does not bear any bristles, except some short ones behind and below the stigma and two long ones near the ventral margin. The eighth sternite is similar to that of *eumolpi*, but is rather wider at the apex. It bears two very long bristles at the apex, one on each side, and several short hairs in front of them. The manubrium of the clasper is obtuse. The process of the clasper is longer and slenderer than in *eumolpi* (Pl. VI. fig. 1). The finger is peculiar in shape, being long, with the distal margin angulate below the

middle and concave between this angle and the apex (Pl. VI. fig. 1, r). There is a long heavy bristle at the angle, with a short one above it. Another small bristle stands at the apical margin near the distal corner. The proximal portion of the ninth sternite bears a row of bristles at the ventral edge. The distal portion is curiously curved, bearing a row of bristles at the ventral edge, which row extends from the sinns of the sternite two-fifths of the way to the apex.

Length : ♂, 2.3 mm.

We have five specimens of this species, collected by Mr. G. F. Dippie : —

1 ♂, Red Deer, Alberta, Canada, August 4th, 1901. *Ecotomys gapperi*.

4 ♂♂, " " " April 28th " " *saturatus*.

8. *Ceratophyllus abantis* spec. nov. (Pl. VI. fig. 10).

This is a paler insect than *eumolpi* and *quirini*.

Head.—The head agrees in the main with that of *eumolpi*. The rostrum is shorter, not reaching to the apex of the forecoxa.

Thorax.—The mesothoracical sternum bears about six small hairs from the upper end downwards. On the mesonotum there are four or five subapical hair-like spines. The metanotum bears one or two apical spines on each side.

Abdomen.—The numbers of apical spines on the first four tergites are as follows : one, two, two, one. The dorsal bristles of the second row of the seventh tergite stand close together, as in *quirini*. The sternites are as in *eumolpi*, but have rather fewer hairs in front of the long bristles.

Legs.—The forefemur bears on the outer side six small hairs. The midfemur has no lateral hairs on the outer side, and only one on the inner side. The hindfemur bears one on the outer side and four on the inner side, apart from the ventral subapical bristle. The mid- and hindtibiae bear on the outer side two rows of hairs, the hindtibia bearing on the inner surface a row of five or six. The longer bristle of the third dorsal pair of bristles of the hindtibia is longer than the subapical pair. The first midtarsal segment is proportionately longer than in *eumolpi* and *quirini*, being hairy on the ventral surface, while the lateral bristles are not prolonged as in those species. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	21	16	11	7	17
Hindtarsus . . .	45	28	18	11	19

Modified Segments.—♂. The eighth tergite bears four bristles along the dorsal edge from the stigma backwards, and on the side eight more, besides two long ones which stand near the ventral margin, one above the other. The eighth sternite (Pl. VI. fig. 10) is dilated in the middle, being lancet-shaped. It bears two bristles at the tip and a row of hairs from the apex to the middle, besides a number of very minute hairs. The manubrium of the clasper is rounded at the apex. The process of the clasper (Pl. VI. fig. 10, r) is club-shaped. The finger is very large, being broadest at the apex, bearing near the distal edge three heavy spines, of which the ventral one is long and acute, while the two others are less than half the length and blunt. The third stands at the rounded apical distal

angle with a thin bristle above it, while the second is placed halfway between the first and third. The finger is emarginate between the first and second spines. The ninth sternite is similar to that of *quirini*.

Length: ♂, 2.8 mm.

We have two ♂♂ of this species, collected by Mr. G. F. Dippie:—

1 ♂, Canadian National Park, Alberta, August 17th, 1899. *Putorius longicaudatus*.

1 ♂, Horse Creek, Upper Columbia Valley, B. C., October 13th, 1903. *Microtus drummondi*.

9. *Ceratophyllus euphorbi* spec. nov. (Pl. VI. fig. 11).

Head.—In front of the three eye-bristles there is a single bristle near the antennal groove, and a second smaller one further upwards. On the occiput there are three bristles along the antennal groove between the long ventral subapical one and the base of the antennal groove. The second bristle of the subapical row is absent, the interspace between the long ventral bristle and the next being large. The rostrum reaches to the end of the trochanter, the last segment being twice the length of the penultimate one.

Thorax.—The pronotum bears a comb of nineteen spines. On the mesonotum there are two rows of bristles, with a number of additional hairs on the back. At the base the mesonotum bears two irregular rows of short hairs, and before the apex, on each side, a row of five hair-like spines. The mesothoracic sternum bears about ten hairs. On the metanotum there are two rows of bristles and one or two additional dorsal bristles close to the anterior row. The metanotum bears one spine on each side. The epimerum of the metathorax has four or five bristles (1.2.1., or 2.2.1.).

Abdomen.—The tergites bear two rows of bristles and two or three additional bristles on the back close to the anterior row. This anterior row is not complete on tergites 4 to 7. The lowest bristle, which is small and stands above the stigma, is separated from the next by a wide space. The seventh tergite has one long apical bristle, accompanied on each side by a minute hair. The first sternite bears one rather long bristle, the other sternites three, there being no hairs in front of these bristles.

Legs.—The forefemur has about nine hairs on the outer surface. The midfemur bears on the inner side two, the hindfemur three bristles, there being none on the outer surfaces. There are two lateral rows of bristles on the outer side of the mid- and hindtibiae, and a row of five or six on the inner side of the hindtibia. The first foretarsal segment bears two long slender bristles on the hinder side, the apical one nearly reaching to the apex of the second segment. The lateral bristles of the hindtarsus are rather hairy, the longest posterior apical one reaching beyond the base of the subapical pair of the second segment. The measurements of the mid- and hindtarsi are as follows:—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus	18	16	11	8	16
Hindtarsus	42	27	17	11	18

Modified Segments.—The eighth tergite bears four bristles at the dorsal edge from the stigma to the apex, the first being thin and short and the fourth standing close underneath the third. There are, moreover, about five more bristles further down, and a vertical row of three near the ventral margin. The eighth sternite is long, rod-like, and curved, bearing one bristle at the apex on each side (Pl. VI. fig. 11, viii. st.). The process of the clasper (Pl. VI. fig. 11, r) is broad, being rounded at the apex, nearly reaching to the tip of the finger and bearing at the distal side a pair of long bristles halfway down towards the insertion of the finger. The latter is long, being almost straight on the proximal side, but evenly rounded on the distal side. It bears five bristles at the distal side, of which the ventral one is the stoutest and the uppermost the longest (Pl. VI. fig. 11, r). The manubrium (M) is nearly straight at the apex and obtuse, though its apical fifth is rather narrower than in most species. The outline of the ninth sternite cannot be made out from the single specimen at our disposal. It bears a patch of hairs before the middle.

Length : ♂, 2.4 mm.

We have 1 ♂ from Horse Creek, Upper Columbia Valley, B. C., October 13th, 1903, from *Peromyscus canadensis*, collected by Mr. G. F. Dippie.

10. *Ceratophyllus aeger* spec. nov. (Pl. VI. figs. 5, 7, 9).

This insect is very closely allied to *C. wickhami* Baker, being perhaps only a geographical form of it. It is distinguished in both sexes by there being eight or nine hairs on the outerside of the hindtibia, instead of the five or six (seldom seven) found in *wickhami*. The hindtarsus is shorter than in that species, especially the fourth and fifth segments. The second hindtarsal segment bears three pairs of bristles on the posterior side, including the apical bristles, the first pair standing far before the middle. The measurements of the mid- and hindtarsi of *wickhami* and the new species are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
<i>wickhami</i> .					
Midtarsus, ♂ . .	16	15	11	7	16
" ♀ . .	19	16	11	8	17
Hindtarsus, ♂ . .	41	26	16	10	18
" ♀ . .	41	26	17	11	20
<i>aeger</i> .					
Midtarsus, ♂ . .	15	12	9	6	13
" ♀ . .	15	12	9	6	13
Hindtarsus, ♂ . .	34	19	13	8	14
" ♀ . .	34	19	13	8	14

In the *male* of *aeger* the eighth tergite bears two bristles near the ventral edge instead of three. The eighth sternite is small in both species. It is without bristles, and is more reduced in *aeger* than in *wickhami*. The internal vertical process is shorter, and the long membranous apical lobe (which bears minute hairs) is narrower than in Baker's species. The process of the clasper is much broader than in *wickhami* (compare Pl. VI. fig. 5 with fig. 6). The finger is narrow at the

top, the rounded upper margin being shorter.* The proximal lobe of the ninth sternite is anteriorly rounded in *wickhami* (Pl. VI. fig. 8), while it is sharply angulate in *aeger* (Pl. VI. fig. 7). The spine situated on this lobe is thinner in the new species, and the large apical portion of the ninth sternite is shorter and broader in *wickhami* than in *aeger*, while the manubrium of the clasper is broader in the new species than in *wickhami*.

In the *female* the longest apical bristle on the posterior side of the first hindtarsal segment reaches beyond the insertion of the subapical pair of the second segment. The corresponding bristle of this latter segment extends almost to the base of the apical bristles of the third, while these bristles are shorter in *wickhami*. The sinus of the seventh sternite (Pl. VI. fig. 9) is rather wider, and the spine-like bristles at the lower edge of the eighth tergite thinner, than in *wickhami*.

We have four examples of this insect, collected by Mr. G. F. Dippie :—

2 ♂♂, Red Deer, Alberta, May 22nd, 1901. *Peromyscus arcticus*.

1 ♀, " " " " " " " " "

1 ♀, " " " April 28th, *Evotomys saturatus*.

11. *Ceratophyllus agilis* spec. nov. (Pl. VII. figs. 16, 17, 18).

This species is closely allied to *C. sexdentatus* Baker, of which we have one pair kindly given us by the author. The differences between the two insects are slight, but quite constant in our series of *Ceratophyllus agilis*. It is probable that intermediate specimens will be found in other localities confirming our supposition that we have here to do with varieties rather than with distinct species.

Both sexes differ from *sexdentatus* in the longest apical bristle on the hinder side of the first hindtarsal segment reaching nearly to the apex of the second segment. This bristle extends in *sexdentatus* hardly beyond the subapical pair of bristles. A further difference is that the hindtibia bears five or six hairs on the inner surface instead of three. The *male*, moreover, can be distinguished by the following characters. In *Ceratophyllus agilis* the eighth tergite bears behind and below the stigma about fifteen bristles (Pl. VII. fig. 17, viii. t.), while in *sexdentatus* there are only eight or nine, inclusive of some very small ones (Pl. VII. fig. 15, viii. t.). The finger (Pl. VII. fig. 16) bears in *Ceratophyllus agilis* only five spines instead of six. The proximal lobe of the ninth sternite is rectangular proximally.

Apart from the longer apical bristle of the first hindtarsal segment and the larger number of bristles on the innerside of the hindtibia, there is apparently nothing by which to distinguish the *female* of *agilis* from that of *sexdentatus*. The seventh sternite (Pl. VII. fig. 18, vii. st.) is very deeply sinuate, being produced above the sinus into a long finger-like lobe, which varies somewhat in outline. The position of the bristles on the eighth tergite is shown in the figure referred to.

Length : ♂, 2.5 mm. ; ♀, 3 to 3.4 mm.

We have a very large series of this species, as follows :—

2 ♂♂, Banff, Alberta, August 8th, 1899. *Neotoma cinerea*. (G. F. Dippie.)

4 ♀♀, " " " " " " " "

16 ♂♂, " " " 9th, " Bushy-tailed Wood-rat. "

16 ♀♀, " " " " " " " "

* In Baker's figure the finger is drawn narrow at the top and sharply truncate. In a *male* received from Mr. Baker, and in our other two *males* of *wickhami*, the finger is much broader and much more rounded at the top than in Baker's figure.

- 1 ♂, Banff, Alberta, July 26th, 1899. *Ochotona princeps*. (G. F. Dippie.)
 1 ♀, " " " " " " " " " " " "
 2 ♀ ♀, Canadian National Park, August 17th, 1899. *Putorius longicaudatus*.
 (G. F. Dippie.)
 2 ♀ ♀, Canadian National Park, August 25th, 1899. Wood-rat. (G. F. Dippie.)
 1 ♂, Red Deer, Alberta, August 20th, 1900. *Sciurus richardsoni baileyi*.
 (G. F. Dippie.)
 2 ♂ ♂, British Columbia. *Neotoma cinerea*. (W. Wenmann.)
 2 ♀ ♀, " " " " " " " " " "
 5 ♂ ♂, Carpenter's Creek, Mt. Cariboo, July 29th, 1901. *Neotoma cinerea drummondi*. (Allan Brooks.)
 26 ♀ ♀, Carpenter's Creek, Mt. Cariboo, July 29th, 1901. *Neotoma cinerea drummondi*. (Allan Brooks.)
 2 ♀ ♀, Penticton, B. C., January 1902. *Putorius longicaudatus*. (G. F. Dippie.)

12. *Ceratophyllus nepos* spec. nov. (Pl. VII. figs. 13, 14).

This is again a very close ally of *C. sexdentatus* and *wickhami*.

Head.—The head is practically the same as in *wickhami*. The anterior row of bristles on the frontal part of the head is represented in the *male* by three hairs, and in the *female* by one small one placed near the antennal groove. The bristle on the hinderpart of the head above the middle of the antennal groove is longer than in *sexdentatus*. The rostrum is also longer than in that species, especially the last segment, which is nearly twice the length of the last but one.

Thorax.—The pronotal comb consists of sixteen or seventeen spines. The mesonotum bears a few small hairs laterally in front of the ordinary two rows of bristles, and near the apex four hair-like spines on each side.

Legs.—There are only two hairs on the inner side of the hindtibia.

Modified Segments.—♂. The manubrium of the clasper is much slenderer than in *sexdentatus*. The finger bears four spines, as in *wickhami*, but is much longer (Pl. VII. fig. 14). The proximal lobe of the ninth sternite bears a longer spine than in *wickhami*, *sexdentatus*, and *aegea*, the anterior angle of this lobe being acute, as in *aegea*. The apical lobe is only a little longer than it is proximally broad. The eighth tergite bears three bristles near the ventral edge, as in *wickhami*, with an additional short bristle close to the proximal one. In *sexdentatus*, *agilis*, and *aegea* there are only two bristles in this position.

♀. The lobe of the seventh sternite is as long as in *sexdentatus* and *agilis*, but broader, the sinus being consequently narrower (Pl. VII. fig. 13). The eighth tergite bears a few more hairs at the apex than in *sexdentatus* and *agilis*.

As we have only one pair of this insect we do not know how far the distinctions mentioned will prove to be constant.

We have 1 ♂ and 1 ♀, Chilliwack, B. C., November 1st, 1899, from *Spilogale latifrons*, collected by Mr. Allan Brooks.

13. *Ceratophyllus acasti* spec. nov. (Pl. VII. figs. 19, 20).

Head.—The frontal notch is small. The eye-row consists of three bristles, the upper one being distant from the antennal groove, standing just in front of the eye. Above this bristle there is a number of small hairs. The second row of bristles generally present in this genus is represented by a single short hair situated near

the antennal groove. The anterior as well as the posterior portions of the head are dotted all over with the points of insertion of small hairs. The occiput does not bear any large bristles except the subapical row. This row contains eight bristles on each side, the lower three standing rather close together. The rostrum reaches to the apex of the trochanter, the last segment being longer than the two preceding ones together.

Thorax.—The pronotum is dorsally longer than the spines of the comb. It bears one row of bristles and a comb of twenty-eight spines. The mesonotum, which is half as long again as the metanotum, bears two rows of bristles, the hairs of the anterior row being short. In addition, there is a small number of short hairs on the back. At the base of this segment there is a number of very slender and rather long hairs, and before the apex there is a further row of five to seven long, slender spines. There are about ten bristles on the metathoracical sternum, and about eight on the epimerum. The metanotum bears a few bristles dorsally in front of the two usual rows, and there is one apical spine. The metathoracical episternum, which is longer than usual, bears one small bristle, and the sternum one long bristle, while on the epimerum there are five (1.3.1.) bristles.

Abdomen.—The abdominal tergites bear two rows of bristles, with one or two hairs in front of them. The first, second, and third tergites bear two or three spines, and the fourth one. These spines on the second and third tergites are placed in a deep sinus (Pl. VII. fig. 20), the edge of the segments being denticulate above and below the sinus. There are four long apical bristles on the seventh segment, the third being the longest and the fourth the shortest. The basal sternite has only one ventral bristle on each side, while on the sternites of segments 3 to 6 there is a row of four or five long bristles, besides some additional hairs in front of them, these additional hairs being most numerous on the posterior segments. On the sternite of the seventh segment there is a row of six bristles, with five or six hairs in front of them.

Legs.—The hindcoxa is as broad as it is long at the meral suture. There are two bristles posteriorly at the apex. The hindfemur has no bristles on the lateral surface, except one small one on the inner side above the curvature of the ventral margin. The hindtibia bears one row of bristles close to the dorsal pairs. The longer bristles of the second, fifth, and apical pairs are very long. The sixth pair is represented by one stout bristle and a tiny hair. The hairs on the ventral side of the tarsi are few in number, the second, third, and fourth hindtarsal segments bearing only two ventral hairs, situated at the apex. The second hindtarsal segment bears only three pairs of bristles on each side. The fourth segment is cup-shaped, being half as long again as it is broad, and bearing bristles only at the apex. The fifth segment is short, being about twice as long as it is broad. It bears on each side four bristles, besides a subapical hair. The first and second bristles are stout and long, the second being somewhat dislocated towards the middle, while the third and fourth are slender. There are, besides, two subbasal ventral bristles in between the first pair. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Foretarsus.	29	21	14	7	18
Hindtarsus	61	33	21	12	20

Modified Segments.—♀. The seventh sternite (Pl. VII. fig. 19) is bisinuate, the upper sinus being broad and shallow, the lower being small. The eighth tergite bears a few hairs above the stigma, and two long and two short ones below it. The bristles on the lower part of the segment are situated as shown in the figure. The stylet is very long and curved. The anal tergite bears two bristles at the corner below the insertion of the stylet.

Length : ♀, 4 mm.

This species is easily recognised by the characteristic stylet, the armature of the abdominal tergites, and the shape of the seventh sternite. The head and tarsi also readily distinguish this insect.

We have one example of this insect from Quesnel, B. C., November 2nd, 1900, from *Sciuropterus sabrinus*, collected by Mr. G. F. Dippie.

14. *Ceratophyllus lucifer* spec. nov. (Pl. VI. fig. 12).

Only the *female* is known.

Head.—The frontal tubercle is small. The second of the three eye-bristles stands closer to the uppermost than to the ventral one. On the occiput there is a bristle behind the base of the antennal groove and another before the middle with a smaller one above it. The subapical row is complete, the second bristle being equidistant from the first and third. The long ventral bristle of this row is accompanied by three bristles, one standing in front of it, another below it, and a third minute one above it. The rostrum reaches a little beyond the apex of the forecoxa.

Thorax.—The pronotum bears a comb of nineteen to twenty spines. On the mesonotum there are two rows of bristles, besides a great number of small hairs, which stand on the back and at the base. It bears, moreover, five slender subapical spines on each side. The mesosternum bears about ten hairs, which are mostly minute, and the epimerum of the mesothorax six or seven bristles. The metanotum bears three rows of bristles, the first row not reaching halfway down the side. It possesses also two apical spines on each side. On the epimerum of the metathorax there are eight bristles (3.4.1.).

Abdomen.—The first tergite bears three rows of bristles, the other tergites two, all having in addition two or three hairs on the back. There are three apical bristles on the seventh tergite, the first and third being about half the length of the second or a little less. The first sternite bears one ventral bristle on each side, the following four sternites possessing a row of four or five bristles with a few hairs in front. The seventh sternite bears five long bristles and about eighteen shorter ones. This segment is deeply sinuate (Pl. VI. fig. 12).

Legs.—The hindfemur bears on the inner side a row of four bristles, besides the subapical bristle. On the outer side of the hindtibia there are two lateral rows of bristles, and on the inner side a row of from four to six. The first three hindtarsal segments bear two almost regular rows of bristles on the ventral surface. The longest apical bristle of the second hindtarsal segment does not reach the apex of the third segment, while the longest apical bristle of the third segment reaches just beyond the apex of the fourth. The latter segment is about twice as long as it is wide at the apex. The first lateral pair of bristles of the segment is on the fore- and midtarsus distinctly dislocated towards the middle, while on the hindtarsus it is as much lateral as the third pair,

Modified Segments.—The deep sinus of the seventh sternite (Pl. VI. fig. 12) reminds one of *Ceratophyllus newsteadi* Rothsch. The eighth tergite bears two long and several short bristles below the stigma. There are two or three long bristles at the apex of the segment, besides two short stout ones. The patch of bristles situated near the ventral edge contains fifteen to eighteen bristles.

Length : 27 mm.

We have two specimens from Red Deer, Alberta, Canada, April 5th, 1901, and August 21st, 1901, found on *Microtus drummondi* by Mr. G. F. Dippie.

15. *Ceratophyllus pollionis* spec. nov. (Pl. IX. figs. 28, 31, 32).

Head.—The head of this species is quite peculiar (Pl. IX. fig. 31). The front is rotundate-angulate, especially in the ♂. The eye is situated near the apex of the genal process. There are three rows of bristles on the frontal part of the head, the eye-row consisting of two bristles, of which one is situated at the antennal groove and the other at the genal edge. The second row consists of four bristles, the most ventral of which stands behind the palpus. The third row, containing six bristles, stands in front of the palpus. There are also some small hairs before the eye. On the posterior part of the head there are a complete subapical row of bristles, an oblique median row, and a few additional bristles behind the base of the antennal groove. The rostrum is much shorter than the anterior coxa, the fifth segment of the labial palpus being half as long again as the fourth and twice as long as the third, but shorter than the first.

Thorax.—The pronotum bears on each side a row of five or six bristles, behind which there is a row of very small hairs. The pronotal comb consists of eighteen to twenty spines. The mesonotum bears, besides the two ordinary rows of bristles, rather numerous hairs on the basal half, and has three long thin subapical spines, of which two are dorsal, while the third stands near the ventral edge. On the metanotum there are two rows of bristles and a row of three or four hairs situated in front of them on the back. There are also one or two apical spines on each side. The metathoracical episternum bears three bristles, while there is only one on the sternum.

Abdomen.—The abdominal tergites bear a few hairs in front of the two ordinary rows of bristles, and the first four tergites have one or two apical spines on each side. There are three apical bristles on the seventh tergite, the ventral one not being much shorter than the middle one, while the dorsal one is about half the length. The sternites of segments 3 to 6 bear in the ♂ a row of three or four, in the ♀ of five or six bristles standing close together. In front of this row there are a few short hairs. The seventh sternite bears a row of about five bristles in the ♂, and about seven in the ♀.

Legs.—There is only one bristle posteriorly at the apex of the mid- and hindcoxae. The hindfemur bears one or two lateral hairs on the outer side situated on the basal half. The hindtibia has a row of hairs on the outer side, there being on the basal half two to four additional bristles between this row and the dorsal edge. The bristles of the second, fifth, and apical dorsal pairs of the hindtibia are long and heavy. There are three single stout bristles between the fifth and sixth pairs, the sixth pair standing close to the apical one. The tarsi bear, besides the lateral bristles, numerous ventral ones which are arranged in two more or less regular rows on the mid- and hindtarsi. The first hindtarsal segment is four-fifths the length of

the tibia measured along the ventral edge. The longest apical bristle of the second segment does not reach to the apex of the third. The fifth segment of all the tarsi bears four lateral bristles and one subventral basal pair in between the first lateral pair. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus, ♂ . . .	20	15	11	7	14
" ♀ . . .	23	18	13	9	15
Hindtarsus, ♂ . . .	40	26	16	10	15
" ♀ . . .	48	30	19	10	17

Modified Segments.—♂. The eighth sternite (Pl. IX. fig. 28, viii. st.) is large and almost completely divided in the mesial line, each lobe bearing two rows of long bristles ventrally at the apex and a number of short ones at the dorsal apical edge. The process of the clasper (Pl. IX. fig. 28, v) is triangular, obtuse, bearing one bristle at the apex, another further down, and a few short ones on the back. There are no bristles at the juncture of the clasper with the finger. The latter is triangular, being widest at the apex. It bears two heavy long spines in the upper third, and between them several short bristles (Pl. IX. fig. 28, v). At the distal apical angle there is one long bristle, and in the middle of the upper edge a second smaller one. The ninth sternite (ix. st.) is slender, bearing a number of short hairs, as shown in the figure.

♀. The apex of the seventh sternite is rounded (Pl. IX. fig. 32, vii. st.). The eighth tergite bears a row of bristles above the stigma and a patch of bristles on the lower half as shown in the figure. At the apical edge there are two bristles at the lower corner, and obliquely above them two short ones. The stylet is long and slender, being at least five times as long as it is broad. At the corner of the anal tergite just below the insertion of the stylet there is one single bristle.

Length : ♂, 2.2 mm.; ♀, 2.8 mm.

We have four specimens of this species, collected by Mr. G. F. Dippie :—

1 ♂, Red Deer, Alberta, Canada, August 21st, 1961. *Microtus drummondii*.

3 ♀♀, " " " " 28th, " *Erotomys saturatus*.

16. *Ceratophyllus telegoni* (Pl. IX. figs. 27, 30).

This species is closely related to *C. charlottensis* Baker, but differs in many details, as described below.

Head.—While *C. charlottensis* has a row of three bristles close to and in front of the vestigial eye, and a dot (possibly the point of insertion of a small bristle) just below the vestigial eye, the present species has a single bristle before the eye, and further forward two rows of four or six bristles, the more frontal row ending at the frontal corner of the head as in *charlottensis*, and the second row being more distant from the vestigial eye than in that species.

Thorax.—The mesosternum and mesomerum have more bristles than in *charlottensis*. On the episternum of the metathorax there is a vertical row of three bristles standing rather close together, while *charlottensis* possesses only two widely separated bristles. The long bristle on the metasternum is accompanied in *charlottensis* by a short one standing above it. In the present species the additional bristle is longer than in *charlottensis*, and there is another also below the long bristle.

Abdomen.—The seventh tergite bears three apical bristles, of which the uppermost is at least two-thirds the length of the middle one in the ♂, while in the ♀ both the dorsal and ventral one are less than half the length of the middle one. In *charlottensis* the ventral one is about two-thirds the length of the middle one in both sexes.

Legs.—On the outer side of the hindfemur there are two or more bristles near the base. The longest apical bristle of the first hindtarsal segment reaches a little beyond the apex of the second. On the fifth segment of all the tarsi there are four lateral bristles and a subapical hair, there being in addition one or two ventral subbasal bristles on the fore- and midtarsi, and one such bristle on the hindtarsus between the first pair of lateral bristles. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	13	10	7	6	14
Hindtarsus . . .	32	21	14	8	16

Modified Segments.—♂. The eighth tergite is very short (Pl. IX. fig. 30, viii. t.), while the sternite (viii. st.) is enlarged, bearing at the apical edge a row of bristles, of which those standing near the angle are very long. The process of the clasper is triangular, and bears very long bristles along its distal edge (Pl. IX. fig. 30, r). The finger is enormously enlarged (F). It bears numerous fine hairs along the edge. Its inner surface is very densely hairy in its upper fourth, and there is also a patch of rather longer hairs near the ventral distal bend of the edge. The manubrium (M) is nearly straight. The vertical and horizontal portions of the ninth sternite are bent towards each other forming an acute angle, which, however, is rounded off. The right and left halves are quite separate from each other, except at the ventral angle, each side of the body having its own "boomerang." In this character *C. telegoni* approaches the species of the genus *Ctenophthalmus*, which have the two halves quite separate. This sternite bears at the apex one short stout spine, and behind it some fine hairs, upon which follow further proximad two peculiar curved bristles, which are very pale, being apparently flat, these bristles resembling those scale-like ones described in *Nor. Zool.* xi. p. 638, Pl. XIII. fig. 65. Still further towards the body a membranous flap projects from the sternite, bearing at the apex some variable spines, which are curved towards each other like the bent fingers of a hand. At and near the upper edge the sternite bears a row of hairs.

♀. The seventh sternite of *C. telegoni* (Pl. IX. fig. 27, vii. st.) is shallowly bi-emarginate, while in *charlottensis* the lower sinus is absent, the apex of the segment appearing feebly emarginate from top to bottom. The eighth tergite bears a row of short bristles from the dorsal edge downwards as shown in the figure, and an apical ventral patch of bristles (Pl. IX. fig. 27). The eighth sternite is pointed and bears a few extremely small hairs at the upper edge.

Length : ♂ and ♀, 2.2 mm.

We have six examples of this species, all collected by Mr. G. F. Dippie, as follows :—

3 ♂♂, Horse Creek, Upper Columbia Valley, October 14th, 1903. *Microtus drummondi*.

1 ♀, Horse Creek, Upper Columbia Valley, October 14th, 1903. *Microtus drummondi*.

2 ♀ ♀, Kicking Horse Canyon, Alberta, October 6th, 1903. *Erotomys gapperi*.

17. *Ceratophyllus charlottensis* (Pl. IX. fig. 33).

Pulex charlottensis Baker, *Journ. N. Y. Ent. Soc.* vi. p. 56 (1898).

Ceratophyllus charlottensis id., *Proc. U. S. Nat. Mus.* xxvii. p. 390. t. 12. f. 6—10 (1904).

This species was described by Mr. Carl Baker from *females* found by the Rev. J. H. Keen on Queen Charlotte Islands. We have some ♂♂ and ♀♀ of a flea found both in British Columbia and in Alberta which we consider to be *charlottensis*, the ♀ agreeing well with the description and figures given by Mr. Carl Baker.

We publish herewith a figure of the clasping organs of the ♂. It will be noticed by comparing Pl. IX. fig. 33 with fig. 30 that the eighth sternite is quite different from that of *telegoni*, as it bears no hairs at the apex. The process of the clasper is much larger than in *telegoni*, while the finger is much smaller. The manubrium is curved. The ninth sternite resembles that of *telegoni* in the main, but there are two spines at the apex, with a thinner one behind them. There is also a patch of short broad bristles instead of the two long curved ones of *telegoni*. The dorsal hairs and the flap with spines found in *telegoni* are not present in *charlottensis*.

We have eight examples of this insect, as follows :—

1 ♂, British Columbia. *Peromyscus leucopus*. (W. Wenmann.)

1 ♀, „ „ *Neotoma cinerea*. „

1 ♂, Red Deer, Alberta, Canada, May 22nd, 1901. *Peromyscus arcticus*.
(G. F. Dippie.)

2 ♀ ♀, Red Deer, Alberta, Canada, April 25th, 1901. *Erotomys saturatus*.
(G. F. Dippie.)

2 ♂♂, Horse Creek, Upper Columbia Valley, October 13th, 1903. *Peromyscus*.
(G. F. Dippie.)

1 ♀, Horse Creek, Upper Columbia Valley, October 13th, 1903. *Peromyscus*.
(G. F. Dippie.)

LEPIDOPTERA COLLECTED BY OSCAR NEUMANN IN NORTH-EAST AFRICA.

By THE HON. WALTER ROTHSCCHILD, PH.D., AND KARL JORDAN, PH.D.

(Continued from vol. x. p. 542.)

SATYRINAE.

70. *Mycalesis safitza aethiops* subsp. nov.

Mycalesis safitza, Aurivillius. *l.c.* p. 56. n. 46 (1899) (partim : Abyssinia) ; Pagenst., *l.c.* p. 132. n. 1 (1902) (syn. excluded).

All the specimens found by O. Neumann and Baron von Erlanger differ from the East and South African *safitza safitza* in the discal line on the underside of the forewing being curved costad, standing at right angles to costal margin, and in the discal line of the hindwing being much more irregular, curving distad between R^1 and R^3 .

The clasper of the ♂ has a much shorter narrowed distal portion. The two tufts on the upperside of the hindwing are of the same colour as in *s. safitza*, the one in the cell being creamy grey, the other dark brown. The specimens are all subocellate or punctate on the underside of the hindwing, with the exception of the two individuals from the Gillet Mts., in which the ocelli are rather better developed. None of the specimens have the discal line of the underside conspicuously bordered with cream-colour. The same applies to the individuals in Baron von Erlanger's collection.

10 ♂♂, 3 ♀♀, from : Gillet Mts., 1900—2200 m., 1.vii.1900, *type* ; Lake Abassi, 4.6. and 9.xii.1900 ; Abera to Koritscha, 23.xii.1900 ; Alesa, Koscha, 23.ii.1901 ; Alesa to Schetie, Koscha, 25.ii.1901 ; Uma R., Konta, 1.iii.1901 ; Anderatscha, Kaffa, 24.iii.1901 ; Kankati to Djibbe, Djimma, 26.iii.1901.

Besides a long series of *aethiops*, Baron von Erlanger found also two specimens of *M. anynana vicaria* Thurn, not mentioned by Pagenstecher, one from Wolessch, 15.ii.1901, and the other from Fanole, 27.vi.1901.*

There seem to be numerous undescribed African species of *Mycalesis* in collections. The genus is, however, a difficult one to deal with. A thorough revision, based on a large material and an extensive study of the morphology of the species, is a great desideratum. As we have no time at present for a thorough comparison of the structure of these insects, we abstain from describing any new species, but offer only a few corrections to the list given in Aurivillius's great work.

M. mandanes Hew. is not a synonym of *auricruda*, but is the same species as *graphidabra*.

M. kenia Rogenh. appears to us to be a subspecies of *mandanes*. The structure of the type should be compared with that of *mandanes*.

M. ansorgei Sharpe is the same as *mollitia* Karsch, the latter name having priority.

M. dentata Sharpe (= *fluvialis* Grose-Smith) is apparently the same as

* The larger proportion of Baron von Erlanger's specimens is now in the Tring Museum.

M. dubia Auriv., the description and figure of the latter agreeing well with our series of *dentata*.

M. nebulosa Felder, *Reise Norara Lep.* p. 502, is said to be from Guinea. The only specimen in the Felder collection is labelled "Senegal, type." Guérin's *funebris*, also from the Senegal, may have been based on an ocellate specimen of the same species.

M. angulosa Butl. is quite distinct from *vulgaris* Butl.

71. *Neocoenyræ duplex*.

Neocoenyræ duplex Butler, *Proc. Zool. Soc. Lond.* 1885. p. 758. n. 4 (1886) (Somaliland); Auriv., *l.c.* p. 72. n. 4 (1899).

Only 1 ♀, from Gololota, 18. vi. 1900.

As the type of *Ypthima* Hübner, *Verz. bek. Schm.* p. 63, is *cassus* L., according to our simplified treatment of composite genera [see *Nor. Zool.* x. Suppl. p. xxii. (1903)] we employ for the following insects the term *Callyphthima*, which is the defined term coming next in priority after *Ypthima*, *Strabena* being a *nomen nudum*.

72. *Callyphthima itonia*.

Ypthima itonia Hewitson, *Trans. Ent. Soc. Lond.* (3). ii. p. 287. n. 11. t. 18. f. 13 (1865) (White Nile).

Ypthima itonia. Aurivillius, *l.c.* p. 78. n. 25. (1899).

Ypthima hoeckeli Holland, *Proc. U. S. Nat. Mus.* xviii. p. 744 (1896).

Ypthima asterope, Pagenstecher (non Klug, 1832), *l.c.* p. 132. n. 1 (1902) (partim).

All the specimens obtained by O. Neumann as well as by Baron von Erlanger differ from typical *itonía* in the underside being more rufescent and in the ocelli of the underside of the hindwing being absent or vestigial, only one of Baron von Erlanger's specimens (Lake Awala, 17. xii. 1900) having a series of seven very small ocelli. The clasper is unlike that of any other African species of *Callyphthima*, being broad and apically bilobate. On the innerside there is an apical longitudinal ridge, which is higher in the Abyssinian specimens than in our West African ones. We have not sufficient material for studying the geographical and seasonal variation of the species, and therefore abstain from giving a name to the present non-ocellate form of *itonía*. SC² of the forewing is distal of the upper angle of the cell. Aurivillius, *l.c.*, had some doubts about *hoeckeli* being distinct from *itonía*. The description of *hoeckeli* seems to us to agree perfectly with our specimens of *itonía* from East Africa.

2 ♂♂, 1 ♀, from : Lake Abassi, 7. xii. 1900; Abera, Djamdjam, 17. xii. 1900.

Baron von Erlanger met with it at : Lake Abassi, 11. xii. 1900; Lake Awala, 17. xii. 1900; Awara, 20. xii. 1900.

73. *Callyphthima impura*.

Ipthima impura Elwes & Edwards, *Trans. Ent. Soc. Lond.* p. 23. n. 27. t. 3. f. 48 (1893) (Angola; Gaboon; Zambesi; Delagoa Bay); Auriv., *l.c.* p. 78. n. 22 (1899).

Ipthima asterope, Pagenstecher (non Klug, 1832), *l.c.* (1902) (partim).

This species seems to be very common in the regions traversed by O. Neumann and Baron von Erlanger. Most specimens are without ocelli on the underside

of the hindwing, but some have three, one in front and two behind ; in a ♂ from the Upper Bussijo the first and second ocelli are large, the first being the larger. The tenth tergite of the ♂ is not gradually narrowed to a point as it is in *itonina*, *asterope*, *simplicia*, and *granulosa*, but ends in a short acute tooth. The tergite is, moreover, channelled above, the lateral edges being raised.

Miss Sharpe, in *Proc. Zool. Soc. Lond.* p. 530, n. 5 (1896) records *doleta* from Sheikh-Hussein. As *doleta* is apparently confined to the western side of the Continent, where it is common, we doubt the correctness of the identification of the Sheikh-Hussein specimens. Miss Sharpe's individuals belonged probably to the present species. *Callyphthima doleta* Kirby differs in the structure of the antenna very much from the other African species. The biseriate grooves of the antenna are in *doleta* restricted to the apical portion of each segment, the grooves being very much reduced in length and width. In the other species of *Callyphthima* the grooves extend down to the bases of the segments, and the two of each segment are separated from one another by a carina.*

4 ♂♂, 2 ♀♀ from : Gara-Daij or Abunass, 2500 to 2700 m., 10. vii. 1900 ; Upper Bussijo, Gindeberat, 24. ix. 1900 ; Rafissa, Lake Abassi, 10. xii. 1900 ; Habelat to Alata, Sidamo, 11. xii. 1900 ; Abera, Djamdjam, 17. xii. 1900 ; Alesa, Kotscha, 23. ii. 1901.

A long series among Baron von Erlanger's material from Lake Abassi, 9—12. xii. 1900 ; Galata, 13. xii. 1900 ; Sagan, 8. i. 1901.

74. *Callyphthima simplicia*.

Ypthima simplicia Butler, *Ann. Mag. N.H.* (4). xviii. p. 481 (1883) (Atbara) ; Auriv., *l.c.* p. 77. n. 20 (1899).

Ypthima asterope, Pagenstecher (non Klug, 1832), *l.c.* (partim).

2 ♂♂ from : Gara Daij or Abunass, 2500 to 2700 m., 10. vii. 1900 ; Aveve, Kollu, Schoa, 22. ix. 1900.

The specimens are larger and below darker than the type of *simplicia* ; the specimen from Aveve has two large ocelli on the underside of the hindwing, besides the small anal ocellus ; in the other specimen all three ocelli are small.

The specimens resemble in the dark coloration more *granulosa* Butl. than *simplicia* ; but as the abdomen of the type of *granulosa* is missing, it is hardly possible to do more than accept as *granulosa* the insect treated as such by Messrs. Elwes and Edwards.

A specimen of *simplicia* similar to that from Gara Daij is among Baron von Erlanger's material from Akaki, 22. x. 1900.

75. *Callyphthima asterope*.

Hipparchia asterope Klug, in Hempr. & Ehrenb., *Symb. Phys.* text t. 29. f. 11—14. ♂ ♀ (1832) (Syria).

Ypthima asterope, Aurivillius, *l.c.* p. 77. n. 18 (1899) (partim ?) ; Pagenst., *l.c.* (partim).

A specimen from Odamuda to Djugi, Djidda, 20. vi. 1900 (Erlanger and Neumann), and several from Ginir, 20. ii. 1901, Wolessch, 15. iii. 1901, and Ganale, 15. iv. 1901 (Erlanger), agree fairly well with Syrian *asterope* except

* See *Nov. Zool.* v. p. 375 ff. : "The Antennae of Butterflies."—I have there described and figured (p. 389. t. 15. f. 57) the antenna of *doleta* as that of *asterope*, being misled by a wrong identification in the collection.—K. J.

in the clasper being obviously broader and shorter. The naming of inconspicuous species and subspecies of this genus must be left to a future revision of the genus.

In Baron von Erlanger's collection there are several specimens of another small *Callyphthima* from the Webi Mane, 26 and 27. iii. 1901, and from Ginir, 2. ii. 1901, which seem to represent a new species, if they do not belong to some Indian species. The underside of the hindwing is rather paler than in *asterope*, and the clasper is much slenderer.

Callyphthima papillaris Butl. is easily recognised by the short and very broad, triangular, tenth tergite of the ♂. The species is ocellate or non-ocellate on the underside of the hindwing.

ACRAEINAE.

76. *Pardopsis punctatissima*.

Acraea punctatissima Boisduval, *Faune Mal. Bourb. Musc.* p. 31. t. 6. f. 2 (1833).

Pardopsis punctatissima, Aurivillius, *l.c.* p. 81. n. 1 (1899) ; Pagenst., *l.c.* p. 133. n. 1 (1902).

The specimens from tropical Africa are similar to those from Madagascar, having smaller black dots than the individuals from temperate South Africa.

6 ♂♂, 1 ♀ from : Harro Rufa, Mojo River, 1. vi. 1900 ; Mojo River, Atschabo, 2. vi. 1900 ; Mojo to Wabbi Rivers, 7. vi. 1900 ; Oda, near Gurgura, 13. vi. 1900 ; Jabolo, 14. vi. 1900 ; Sekwala, Schoa, 18. xi. 1900.

77. *Acraea quirina*.

Papilio Parmassius quirina Fabricius, *Spec. Ins.* ii. p. 36. n. 152 (1781) ("Madras" err. loci).

1 ♀ from : Upper Gelo River, 4. v. 1901.

78. *Acraea admatha*.

Acraea admatha Hewitson, *Exot. Butt.* iii, *Acraea* t. 3. f. 16. 17 (1865) (Old Calabar).

In one specimen there is a small white patch consisting of two spots at the abdominal margin of the hindwing.

2 ♂♂ from : Scheko, 26. iv. 1901.

79. *Acraea insignis*.

Acraea burtoni, Hewitson (non Butler, 1875), *Ent. Mo. Mag.* xiv. p. 155 (1877) (Dar-es-Salaam).

Acraea insignis Distant, *Proc. Zool. Soc. Lond.* p. 184 (1880) (Magila); Auriv., *l.c.* p. 89. n. 18 (1899).

Acraea bulbina Oberthur, *Et. d'Ent.* xii. p. 6. n. 11. t. 3. f. 8 (1888) (Germ. E. Afr.).

Acraea insignis signina Suffert, *Iris* xvii. p. 19 (1904) (Germ. E. Afr.).

The specimens procured by Herr Neumann have the black spots of the hindwing completely merged together above and below, as in the individuals named *signina* by Herr Suffert, more so than in the specimen figured as *bulbina* by Oberthur. Only in one specimen there are some whitish dots in the black patch on the underside.

3 ♂♂, 1 ♀ from : Banka, Malo, 17. ii. 1901 ; Northern Kaffa, beginning of April 1901.

80. *Acraea horta neobule*.

Acraea neobule Doubleday, Westw. & Hew., *Gen. Diurn. Lep.* i. p. 140. n. 8. t. 19. f. 3. ♀ (1848) (Congo); Reiche, in Ferr. & Gall., *Voy. Abyss., Ent.* p. 466. t. 33. f. 3. 4 (1849) (Abyssinia); Auriv., *l.c.* p. 89. n. 21 (1899).

Acraea horta, Pagenstecher, *l.c.* p. 133. n. 1 (1902).

7 ♂♂, 1 ♀ from: Bubassa, 22. v. 1900; Djabdjabdu, 24. v. 1900; Ganda Ali to Idja Harrorissa, 30. v. 1900; Harro Rufa, Mojo River, 1. vi. 1900; Mojo River, Atschabo, 3. vi. 1900; Alesa, Koscha, 25. ii. 1901.

81. *Acraea chilo*.

Acraea chilo Godman, *Proc. Zool. Soc. Lond.* p. 184. t. 19. f. 4. ♂, 5. ♀ (1880) (Abyssinia).

Acraea zetes var. *acara*, Pagenstecher, *l.c.* p. 133. n. 2 (1902) (partim).

1 ♂, 2 ♀♀ from: Sso-Omadu, North Somaliland, 12. & 13. ii. 1900; Mojo River, Atschabo, 2. vi. 1900.

In coll. Baron von Erlanger 1 ♂ from Web, 19. iii. 1901, and 1 ♀ from Solole, 11. iv. 1901.

These specimens were enumerated by Pagenstecher as *acara*, together with two specimens of the following form. It appears, indeed, quite possible that *chilo* is only a form of *zetes* with reduced black spots and narrow black margin. They stand in two different sections of *Acraea* in Aurivillius's work.

82. *Acraea zetes sidamona* subsp. nov.

♂. Wings, *upperside*, resembling such Uganda specimens of *zetes* as stand about halfway between the West African *z. zetes* and East African *z. acara*.—Forewing: cell as in *acara*, a red dot each proximally of black subbasal cell-spot and of postcellular subbasal spot; discal costal band of black spots as in *acara*, but spot R³—M¹ more proximal than the others, nearly touching discocellular spot, the red spots just outside discocellulars therefore nearly isolated; red subapical spots outside the black costal band rather smaller than the spots of this band; six isolated reddish orange submarginal spots, larger than in *z. zetes* ♂.—Hindwing: black basal area a little more extended than in *z. acara*, black discal spots as in that subspecies; distal border as wide as in the average Natal specimens.

Underside more red than in the other geographical forms, pinkish like *upperside*, but paler, the hindwing being washed with white as in *acara*.—Forewing: black spots a little smaller than above; yellow submarginal spots all separated from disc by a broad black border, except spot SC⁵—R¹, which is long.

1 ♂ from: Alata, Sidamo, 13. xii. 1900.

1 ♂ in coll. Baron von Erlanger from: Fanole, 27. vi. 1901.

83. *Acraea oscari*.

Acraea oscari Rothschild, *Nor. Zool.* ix. p. 595. n. 1 (1902) (Banka).

2 ♂♂ from: Banka, Malo, 16 & 17. ii. 1901.

In one of the two specimens the hindwing is somewhat washed with white between the black subbasal and median spots on the upperside.

84. *Acraea perenna kaffana*.

Acraea perenna kaffana Rothschild, *Nor. Zool.* ix, p. 595. n. 2. (1902) (Kaffa and Konta).

The sexes are practically alike in colour.

3 ♂♂, 1 ♀ from : Dalba to Uma River, Konta, 28. ii. 1901, *type*; Uma River, Konta, 1. iii. 1901; Anderatscha, Kaffa, 12 to 19. iii. 1901; Gobjeb, Bonga, Kaffa, 4. iv. 1901.

85. *Acraea braesia*.

Acraea braesia Godman, *Proc. Zool. Soc. Lond.* p. 538 (1885) (Kilimandjaro); Auriv., *l.c.* p. 99. n. 52 (1899); Pagenst., *l.c.* p. 134. n. 5 (1902).

The border is slightly broader than in East African specimens.

Only 1 ♀ from : Gurgura to Gololota, 17. vi. 1900.

86. *Acraea doubledayi*.

Acraea doubledayi Guérin, in Lefebvre, *Voy. Abyss.* vi, p. 378 (1849) (Abyssinia); Auriv., *l.c.* p. 99. n. 53 (1899).

1 ♂, 1 ♀ from : Artu and Djildessa, north of Harar, 2. & 3. iii. 1900.

87. *Acraea caecilia*.

Papilio Heliconius caecilia Fabricius, *Spec. Ins.* ii, p. 34. n. 142 (1781) (Afr. aequin.).

Acraea caecilia, Aurivillius, *l.c.* p. 100. n. 57 (1899).

The wings are rather more red than in ordinary *caecilia*.

2 ♂♂ from : Abulcassim, 2400—2600 m., 16. vii. 1900; Mole River, 22. i. 1901.

88. *Acraea natalica pseudagina*.

Papilio agina, Stoll (*non* Cramer, 1775), in Cram., *Pap. Es. Suppl.* p. 122. t. 25. f. 3. 3c (1790) (Guinea; Sierra Leone).*

Acraea pseudagina Westwood, in Doubl., Westw. & Hew., *Gen. Diurn. Lep.* ii, p. 531 (1852); Auriv., *l.c.* p. 100. n. 59 (1899).

Acraea natalica, Pagenstecher, *l.c.* p. 134. n. 7 (1902).

1 ♂ from : Alesa, Koscha, 22. ii. 1901.

Another ♂ among Baron von Erlanger's specimens, recorded by Pagenstecher as *natalica*.

89. *Acraea terpsicore*.

Papilio Heliconius terpsicore Linné, *Syst. Nat.* ed. x, p. 466. n. 45 (1758) ("Asia" err. loci).

Acraea terpsichore, Aurivillius, *l.c.* p. 101. n. 64 (1899); Pagenst., *l.c.* p. 134. n. 8 (1902).

An individually variable species. The black oblique band of the forewing is complete in nearly all the specimens obtained. In many individuals there are red spots between the black dots on the underside of the hindwing, and in one pair (Lake Abassi) also between the black halfrings which border the buff marginal spots. The forewing is smoky brown in one ♀ (from Walenso).

* Omitted in Index to Suppl.

15 ♂♂, 8 ♀♀ from : Gillet Mts. 1900—2200 m., 4. vii. 1900 ; Walenso, 2000 m., 8 & 9. vii. 1900 ; Abulcassim, 2400—2600 m., 16. vii. 1900 ; Djaffa, 19. vii. 1900 ; Adis Ababa, 5. ix. 1900 ; Aveve, Kollu, 22. ix. 1900 ; Upper Bussijo River, Gindeberat, 25. ix. 1900 ; Badattino to Abuje, Schoa, 28. ix. 1900 ; Madali, Abai River, 1. x. 1900 ; Badattino, Gindeberat, 4. x. 1900 ; Abuje, Schoa, 29. ix. 1900 ; Lake Abassi, 8. xii. 1900 ; Alesa, Koscha, 25. ii. 1901.

90. *Acraea vinidia*.

Acraea vinidia Hewitson, *Ent. Mo. Mag.* xi. p. 130 (1874) (Angola) ; Auriv., *l.c.* p. 105. n. 68 (1899) ; Pagenst., *l.c.* p. 135. n. 9 (1902).

The three specimens obtained are paler than, or as pale as, the East African *A. v. tenella* on the upperside ; they agree, however, on the underside in the width of the marginal border, especially of the hindwing, better with West African specimens. They have on the upperside pale marginal spots, either on both wings or on the hindwing only.

As *Acraea vinidia* is a very variable species, to which, in our opinion, several other "species" belong as individual and geographical varieties, we think it better to abstain for the present from giving a name to the North-east African form.

3 ♂♂ from : Aveve, Kollu, Schoa, 22. ix. 1900 ; Madali, Abai River, 1. x. 1900 ; Godjebe to Bonga, Kaffa, 4. iv. 1901.

91. *Acraea bonasia alicia*.

Acraea eponima, Oberthür (*nun* Cramer, 1872), *Ann. Mus. Civ. Genova* xv. p. 157. n. 28 (1879) (Schoa).

Acraea abonasia, Aurivillius, *l.c.* p. 105. n. 72 (1899) (partim) ; Pagenst., *l.c.* p. 135. n. 10 (1902).

Acraea alicia Sharpe, *Ann. Mag. N. H.* (6). v. p. 442 (1890) ; Auriv., *l.c.* n. 73 (1899).

The specimens of *bonasia* from Abyssinia and Somaliland agree best with the East African form *alicia*, which completely intergradates with the West African form *bonasia*. The width of the orange-red area on the forewing is individually variable, in some specimens the base of cellule M¹—M² being black, in others not. The black distal borders to the fore- and hindwing, *below*, are not streaked with buff at the veins in *alicia* ♂♂, or only faintly.

32 ♂♂, 1 ♀ from : Upper Bussijo, Gindeberat, 24. ix. 1900 ; Lake Abassi, 4 & 9. xii. 1900 ; Alata, Sidamo, 13. xii. 1900 ; Abera, 23. xii. 1900 ; Abera to Koritscha, Uatadera, 23. xii. 1900 ; Banka, Malo, 16 & 17. ii. 1901.

92. *Acraea cabira* f. *apecida*.

Acraea apecida Oberthür, *Et. d'Ent.* xvii. p. 23. t. 2. f. 15 (1893) (Usambara) ; Auriv., *l.c.* p. 106. n. 76 (1899).

This is doubtless the red form of *cabira*, as suggested by Aurivillius, our series of *cabira* showing all intergradations in colour.

In the three specimens among O. Neumann's material the red patch situated on the forewing before the posterior margin is narrower than in the specimens from Uganda and East Africa, the individuals representing perhaps a distinct North-eastern subspecies. ;

3 ♂♂ from : Lake Abassi, 4. xii. 1900 ; Gardulla, 13. i. 1901 ; Djala, Gofa, 31. i. 1901,

93. *Acraea pharsalus rhodina*.

Acraea pharsalus rhodina Rothschild, *Nor. Zool.* ix. p. 595. n. 3 (1902) (Kaffa).

The black median and discal spots are larger than in *p. thesprio* from East Africa, the discal spot R^1-M^2 seldom standing more than $\frac{1}{2}$ mm. distant from cell at M^1 , often entirely filling up the base of cellules R^3-M^1 . The interspaces between this discal costal band and the black marginal border are red, the red spot R^2-R^3 being longer than the others. There is also a more or less narrow red spot outside the black discal spot R^3-M^1 . The distal border of the hindwing is broader above and below than in *thesprio*, and the black dots somewhat larger, partly touching each other.

16 ♂♂ from : Banka to Omo, 18. ii. 1901 ; Wori to Gamitscha, Kaffa, 5. iii. 1901 ; Anderatscha to Godjeb, Kaffa, 24. iii. 1901 ; Godjeb to Bonga, Kaffa, 4. iv. 1901 ; Scheko, 25. iv. 1901 ; Upper Gelo River, 4. v. 1901.

The black markings of the two Scheko specimens are a little smaller than in the other individuals.

94. *Acraea encedon*.

Papilio Barbarus encedon Linné, *Syst. Nat.* ed. x. p. 488. n. 188 (1758) ("in Indiis" errore).

Acraea encedon, Aurivillius, *l.c.* p. 110. n. 84 (1899).

The series of specimens comprises three forms :

(a) *A. e. f. दौरa*.

Acraea दौरa Godman & Salv., *Proc. Zool. Soc. Lond.* p. 221. t. 17. f. 3 (1884) (Niger).

This was the commonest form at Harar.

20 ♂♂, 11 ♀♀ from : Harar, 3 to 7. iv. 1900 ; and 3 ♂♂ from : Lake Abassi, 6. xii. 1900 ; Alesa, Koscha, 23. ii. 1901.

The specimen from Lake Abassi has the apex of the forewing black down to the subapical band, which is hardly paler than the disc, the costal margin being also blackish.

(b) *A. e. f. encedon*.

Papilio Barbarus encedon Linné, *l.c.*

In one ♀ the forewing has a length of 35 mm., while in another it is only 27 mm. long.

5 ♂♂, 2 ♀♀ from : Harar, 7. iv. 1900 ; Badattino to Abuje, Schoa, 28. ix. 1900 ; Madali, Abai River, 1. x. 1900 ; Lake Abassi, 9. xii. 1900 ; Alesa, Koscha, 23. ii. 1901 ; Dalba to Uma River, Konta, 28. ii. 1901.

(c) *A. e. f. lycia*.

Papilio Heliconius lycia Fabricius, *Syst. Ent.* p. 464. n. 94 (1775) (Sierra Leone).

The specimens approach the yellowish f. *sganzini*, which it is hardly worth keeping apart from f. *lycia* under a separate name.

2 ♂♂, 3 ♀♀ from : Harar, 9. iv. 1900 ; Lake Zuai, 21. xi. 1900 ; Lake Abassi, 7. xii. 1900 ; Alesa, Koscha, 22. ii. 1901 ; Uma River, Konta, 1. iii. 1901.

95. *Acraea peneleos gelonica* subsp. nov.

♂. Wings, *upperside*.—Forewing: the reddish orange spots situated in *p. peneleos* between M^1 and hinder margin are absent or replaced by some creamy scaling, only one specimen bearing a small reddish streak at hinder margin.—Hindwing: black distal border broader than in *p. peneleos*, especially in the middle, the border surpassing here in width the distance from the border to the apex of the cell.

On the *underside* the border of the hindwing is still broader than above, being edged proximally with tawny brown, which reaches to cell at R^3 and M^1 , there being only a small buff spot between these veins; basal area of wing olivaceous buff or washed with rufous; the black dots somewhat reduced in size and number.

3 ♂♂ from: Upper Gelo River, 4. v. 1901.

96. *Acraea safie*.

Acraea safie Felder, *Reise Novara, Lep.* p. 370. n. 533 (1867) (Abyss. mer.); Auriv., *Kongl. Sc. Vet. Akad. Handl.* xxxi. 5. p. 114. n. 104 (1899) (Abyssinia).

Acraea antinorii Oberthür, *Ann. Mus. Civ. Genova* xv. p. 157. n. 29. t. 1. f. 3 (1880) (Schoa, June, August and September); id., *l.c.* xviii. p. 719. n. 31 (1883) (Schoa, June and July).

Acraea safie ab. (var ?) *antinorii*, Aurivillius, *l.c.*

Acraea safie var. *antinorii*, Pagenstecher, *Jahrb. Nass. Ver. Nat.* lv. p. 136. n. 12 (1902) (Moldscha and Gigerio, December).

This species appears in two forms:

(a) *A. safie* f. *safie*.

Hindwing with a broad, curved, yellowish band beyond middle.

(b) *A. safie* f. *antinorii*.

Yellowish spots M^1 — SM^2 of forewing and band of hindwing more or less strongly reduced, the band of the hindwing and the posterior spot of the forewing being sometimes absent. This is apparently the commoner form.

1 ♂ of f. *safie* from Gardulla, 13. i. 1901.

14 ♂♂, 1 ♀ of f. *antinorii* from: Gara Daij or Abumass, 2500—2700 mm., 10 vii. 1900; Abulcassim, 2400—2600 mm., 16. vii. 1900; Aveve, Kollu, Schoa. 22. ix. 1900; Koritscha to Tomata, Dara R., Gudji, 24. xii. 1900; Banka, Malo, 17. ii. 1901; Godjeb to Bonga, Kaffa, 4. iv. 1901.

97. *Acraea jodutta aethiops* subsp. nov.

♂. Similar to the West African *A. jodutta jodutta*.—*Upperside*, forewing with the streak R^2 — R^3 of the submarginal band one-third longer than streaks SC^2 — R^2 ; the discal patch extending closer to base, the black basi-costal area being only 3 mm. wide at posterior margin; a diffused buff patch in cell.—Black basal area of hindwing more reduced; the black distal border narrower and more sharply defined between costal margin and R^3 .

On the *underside* the cell of forewing more washed with buff; the black dots of

the hindwing reduced in size and number, and the brown distal marginal border anteriorly better defined.

♀. Subapical band of forewing angulate as in ♂, either orange or white; the orange patch in front of posterior margin much wider than in ♀ *j. jodutta*, resembling that of ♀ *j. esebria* f. *esebria*.—Hindwing orange (much paler than in f. *esebria*), narrowly black at base, with the black dots of underside hardly showing through; distal margin black only at anterior angle, streaks of posterior cellules vestigial.

On *underside* the subapical band and postcellular patch are connected with one another; black dots reduced as in ♂.

1 ♂, 2 ♀ ♀ from : Dereta Mts., Kaffa, 2. iii. 1901; Gamitscha to Anderatscha, Kaffa, 6. iii. 1901.

98. *Acraea circeis rhodina* subsp. nov.

♂. Similar to *A. circeis lycoides* from East Africa, but the basal area of the hindwing below of a pale ferruginous colour, and the forewing and marginal band of the hindwing also washed with ferruginous.

4 ♂ ♂ from : Banka, Malo, 17. Febr. 1901; and Gamitscha to Auderatscha, Kaffa, 6. March 1901.

99. *Acraea lycoa aequalis* subsp. nov.

♂ ♀. The sexes alike in colour. Spots on forewing buff, in size and position the same as in the East African form of *lycoa*, the two postdiscal spots standing mostly well separated from the subcostal and discal spots; a buff area on the hindwing as in the ♀ ♀ of *lycoa*, rather sharply defined in both sexes, not in the ♀ only.

On the *underside* the greater portion of forewing blackish, the spots nearly as clearly marked as above; base of hindwing paler reddish than in East African *lycoa*, the buffish area less sharply defined than above, but better than in the ♂ ♂ of *lycoa* from West and East Africa.

9 ♂ ♂, 4 ♀ ♀ from : Lake Abassi, 6. xii. 1900; Koritscha to Tomato, Dara R., Gudji, 24. xii. 1900; Uaja to Banka, Malo, 14. ii. 1901; Banka, Malo, 16. ii. 1901; Banka to Omo, 18. ii. 1901; Dereta Mts., Kaffa, 2. iii. 1901, *type*.

The most noteworthy feature in this form is the practical identity of the sexes in pattern and colour, in *lycoa* from East as well as West Africa the sexes being dissimilar.

In collection Baron von Erlanger there are three specimens of this *Acraea*, not recorded by Dr. Pagenstecher, from : Wonda, north of Lake Abassi, 6. xii. 1900; and Lake Abassi, 11. xii. 1900.

100. *Acraea alciope schecana* subsp. nov.

♂. The buff-yellow band of the *upperside* a little paler than in West African ♂ ♂, the black distal border of the hindwing wider, being just behind R⁴ half as wide again as the distance from this band to the apex of the cell, the black streaks between the veins correspondingly shorter; basal dots vestigial.—On *underside* the black dots of the hindwing reduced in size and number; the brown distal border as wide as above.

1 ♂ from Scheko, 25. iv. 1901.

101. *Planema epaea homochroa* subsp. nov.

♂ ♀. The sexes practically alike in colour, resembling the ♂ of *ep. epaea*, the markings of the forewing and the proximal portion of the orange area of the hindwing being only a very trifle paler in the ♀ than in the ♂.

Rather paler orange *above* than *ep. epaea* ♂, the black distal area of the hindwing more restricted, the orange colour reaching to the edge of the wing from the fold R^1 R^2 backwards, the fringe remaining black. On the *underside* the basal area of the hindwing is paler than in *ep. epaea*, and the pale orange band externally of this area more sharply limited distally and narrower, not exceeding in width beyond the apex of the cell; the outer portion of the hindwing from the apex of the cell to distal edge more evenly tawny, shaded with brown, the blackish apical area less extended.

2 ♂♂, 1 ♀, from: Banka, Malo, 16. ii. 1901; Kankati to Djibbe, Djimma, 26. iii. 1901.

PAPILIONIDAE.

102. *Papilio echerioides oscar*.

P. ech. oscar Rothschild, *Nov. Zool.* ix. p. 597. n. 9 (1903).

11 ♂♂ and 3 ♀♀ were obtained at the following places: Kankati to Djibbe, Djimma, 26. iii. 1901; Kankati forest, 3. iv. 1901; Wori to Gomitscha, Kaffa, 5. iii. 1901; Gomitscha to Anderatscha, Kaffa, 5. iii. 1901; Anderatscha to Godjeb, 24. iii. 1901; Detscha to Schubba, Kaffa, 11. iv. 1901; Schubba to Schenna, Kaffa, 11. iv. 1901.

103. *Papilio echerioides leucospilus*.

P. ech. leucospilus Rothschild, *l.c.* p. 598. n. 10 (1903).

3 ♂♂ and 1 ♀ from Gara Mulata, near Harar, 26. to 29. iii.* 1900 (Erlanger and Neumann).

The copulatory organs of *Papilio echerioides* and allied species (*jacksoni*, *homeyeri*, etc.) are practically alike.

104. *Papilio demodocus demodocus*.

Papilio Eques Achiens demodocus Esper, *Aust. Schm.* p. 205. n. 93. t. 51. f. 1 (1798) ("China Bengal").

Papilio demodocus docusdemo Suffert, *Iris* xvii. p. 101. t. 2. f. 1 (1904) (Tabora).

Papilio demodocus albicans, id., *l.c.* p. 402 (1904) (Kamerun).

Papilio demodocus umbila, id., *l.c.* (1904) (the dark colour not due to moisture, etc., but natural).

A number of specimens of this common insect were obtained at various places in Northern Somaliland, Shoa, and Kaffa. There are no structural differences between *P. dem. demodocus* from Continental Africa and South Arabia, *dem. bennetti* from Socotra, and *dem. erithonioides* from Madagascar.

According to Aurivillius, and, quoting from him, Pagenstecher, *P. dem. demodocus* occurs also on Madagascar. The authority for this statement is

In the original description the 20. and 25. March are erroneously given as dates of capture.

Boisduval (1833). However, the Madagascar specimens, which Boisduval referred to "*demoleus*," were doubtless *erithonioides*.

The species does not vary geographically on the Continent. The names supplied by Herr Suffert apply to individual aberrations. To call these individuals "subspecies," and employ for them the formula now accepted by most students of geographical variation for the *varietas geographica* only, is very misleading for those who do not happen to know individuals similar to those described by Herr Suffert. We suppose it was not Herr Suffert's intention to publish as subspecies all the numerous individual aberrations described by him in the number of the *Iris* above cited, as he frequently speaks of them in the text as aberrations, though he designates *Papilio pylades lapydes* and the named individuals of similar standing as "n. subsp."

We have three individuals from the collection of the late Mons. Capronnier representing Capronnier's ab. *nubila*, and we can only again confirm the statement of Aurivillius that the deep colour of the markings is due to discoloration. The wings of these specimens are not black, but have a brownish tint like decayed specimens. The yellow markings are not quite evenly coloured, almost every spot being darker in some places than in others, and some spots having even retained small dots of the natural pale yellow colour of *demodocus*. We have quite a number of specimens of *Papilio demodocus*, *menestheus*, *zalmoxis*, *hesperus*, etc., showing all grades of discoloration. We have repeatedly received collections in tins in a more or less decayed condition, the specimens lying on the top being in perfect order, and those at the bottom of the tin being damp and quite spoiled, the colours being often so evenly changed that the uninitiated author of names might very well be misled to treat such individuals as natural varieties.

105. *Papilio constantinus*.

Papilio constantinus Ward, *Ent. Mo. Mag.* viii. p. 34 (1871) (Ribé, E. Afr.).

Only 2 ♂♂ were obtained, at the Mole River, 22.i.1901. They agree with individuals from Mombasa and Kibwezi, British East Africa.

In most specimens of *P. constantinus* from Natal and Delagoa Bay the band of the hindwing, above, is narrow, and the submarginal spots stand closer to the margin than in the individuals from British East Africa and Ethiopia, the black discal area of the hindwing being obviously wider in most southern examples than in northern ones. Nearly all our specimens from the Kikuyu Escarpment, British East Africa, are distinguished by a broad band and large submarginal spots, the contrast in the width of the black discal area of the hindwing between Delagoa Bay specimens and the Kikuyu ones being very striking. The only three specimens from German East Africa (Mikindani) which we possess are broad-banded, and have the submarginal spots of the hindwing in the same position as Delagoa Bay specimens. They are, moreover, remarkable for possessing, on the upperside of the forewing before R^1 , a large creamy patch which touches the cell, and includes a small black spot, patch R^1-R^2 being also enlarged. The hairy streaks on the upperside of the forewing are variable in width and number. They are narrower in all our Kikuyu specimens and in several examples from other localities, while they are merged together in many individuals from Mombasa, Kibwezi, Mikindani, Delagoa Bay, and Natal.

106. *Papilio dardanus antinorii*.

Papilio antinorii Oberthür, *Ann. Mus. Civ. Genova* xviii, p. 711, t. 9, f. 4 (♀) (1883) (Shoa) : Auriv.
loc. p. 464, n. 6 (1899) (Abyssinia ; Somaliland).

Localities : Abd-el-Kadr, south of Harar, 14.v.1900 ; Gillet Mts., 1900—2200 m., 29. vi. 1900, 4. vii. 1900 ; Walenso, Gillet Mts., 2000 m., 9. vii. 1900 ; Gara-Daij or Abunass, 1900—2200 m., 10. vii. 1900 ; Abulcassim, 2400—2600 m., 16. vii. 1900 ; Koritscha to Tomata, Dara R., Gndji, 24.xii.1900 ; Wori to Gamitscha, Kaffa, 5. iii. 1901 ; Anderatscha, Kaffa, 12 to 19. iii. 1901 ; Kankati to Djibbe, Djimma, 26. iii. 1901.

A long series of ♂♂, but only two ♀♀, which belong to the ordinary kind resembling the *male*. The underside of the hindwing and the apical area of the underside of the forewing varies in the depth of the yellow tint, some specimens being more or less ochraceous, while others are as pale below as above. This difference, which is met with also in the other subspecies of *dardanus*, is not seasonal. The upperside is slightly deeper yellow in some specimens than in others. The apical area of the upperside of the forewing has a nearly straight proximal edge from SC^1 — SM^2 , apart from the dentition at the veins, and forms a kind of hook at the costal margin, the creamy area occupying the base of the cellule SC^1 — SC^5 to a larger extent than even in the Malagasic subspecies *meriones*. This creamy triangle SC^1 — SC^5 is occasionally produced distad along SC^1 , being sometimes even connected with the subapical spot SC^4 — SC^5 , which in this case is produced proximad along SC^1 . The black discal spots R^1 — R^3 of the upperside of the hindwing are small, sometimes absent ; the black anal patch is comparatively large, often connected with the marginal spot M^2 , seldom divided at M^2 into two patches, and includes often a few pale scales indicating a transverse division of the patch ; the black submarginal spots are as a rule separate, the middle ones being generally very small, even vestigial, but there occur specimens in which the spots form a continuous zigzag band from C to R^3 ; the tail is mostly cream-colour, with a small black central streak, not rarely all cream-colour, and occasionally more extended black than creamy. The upper two cell-streaks of the underside of the hindwing are not rarely on a long stalk, as in most *meriones*.

P. dard. antinorii occurs northwards to Eritrea ; the southern limit of its range is as yet not known.

There are five Continental subspecies of *dardanus* :

- (a) *P. dardanus cenea* from South Africa, gradually merging into the next.
- (b) *P. dardanus tibullus* from tropical East Africa (Delagoa Bay northwards).
- (c) *P. dardanus polytrophus* * from the mountainous districts east and west of the Eldoma Ravine, gradually merging into the next.
- (d) *P. dardanus dardanus* from West Africa, ranging from Sierra Leone to Angola and Uganda.
- (e) *P. dardanus antinorii* from Abyssinia and Somaliland.

Herr Suffert's *Papilio boosi*, *Iris* xvii, p. 89, t. 1, f. 2 (♂) (1904) is the same as *polytrophus*. The specimen is certainly *not* from Dar-es-Salaam, where *P. dardanus tibullus* is found, but came doubtless from the hills above Nairobi, in British East Africa, whence Herr Suffert has also received *Lepidoptera*, according to his paper.

* *Nor. Zool.* xi, p. 488 (1903). This very interesting subspecies is not mentioned by Timen in his account of the forms of *dardanus* (all treated as different "species," in spite of the intergradations) ; see *Trans. Ent. Soc. Lond.* p. 691 (December 1904).

107. *Papilio nireus pseudonireus*.

Papilio pseudonireus Felder, *Reise Novara, Lep.* p. 94 (1865) (Bogos, Abyssinia).

Papilio nireus var. A., Oberthür, *Ann. Mus. Civ. Genova* xv. p. 147. n. 3. (1879) (Shea, July).

Papilio donaldsoni Sharpe, *Proc. Zool. Soc. Lond.* p. 537. n. 85 (1896) (Darro Mts., Somaliland) : Auriv., *l.c.* p. 475. n. 37 (1899).

Papilio nireus var. (ab.?) *pseudonireus*, Aurivillius, *l.c.* p. 476. sub n. 38 (1899) (partim).

Papilio nireus, var. *abyssinica*, nov. spec. ! Cannaviello, *Misc. Ent.* x. p. 2 (1902) (Eritrea).

Papilio nireus, Pagenstecher, *l.c.* p. 191. n. 4 (1903) (synonymy, literature, and localities excluded : Mane R., 26. iii. 01).

7 ♂♂ from : Gillet Mts., Somaliland, 1900—2200 m., 29. vi., 1. vii. 1900, Walenso, Gillet Mts., 2000 m., 8. vii. 1900 : Habela to Alata, Sidamo, 12. xii. 1900.

Butler identified as *pseudonireus* quite a different insect (*Proc. Zool. Soc.* 1895. p. 633) and thus misled Miss Sharpe to redescribe the present *Papilio* as a new species.

The specimen from the Mane River mentioned by Pagenstecher as aberration belongs to *pseudonireus*. Pagenstecher in 1903 follows Oberthür, who in 1879 called *pseudonireus* an aberration of *nireus*. However, the Abyssinian specimens identified by Oberthür as true *nireus* are the same as what Pagenstecher gives as *bromius* in his list of the butterflies caught during Baron Erlanger's expedition, and are neither Linné's *nireus* nor Doubleday's *bromius* (nor Godman's *brontes*), but belong to a conspicuously different form of *Papilio*, not found outside Abyssinia and Somaliland (see below, *Papilio aethiops*).

P. nir. pseudonireus differs from the other forms of *nireus* in the blue band of the forewing being more or less reduced. The band is sometimes not narrower than it is in exceptionally narrow-banded West and East African specimens of *P. nir. nireus* and *P. nir. lyaeus*, but the blue spots in the cell of the forewing situated respectively at the upper and near the lower angle of the cell are always smaller in *pseudonireus* than in *lyaeus* and *nireus*. In none of the seven ♂♂ are the spots situated between the costal margin and R^3 of the forewing completely lost, though in one of the examples they are represented only by a few blue scales. Among a series of specimens from Salomona, Eritrea, collected by Schrader in November and December 1897, there are individuals with very strongly reduced median band to the forewing, one of the specimens having no other remnant of the band than three tiny dots between M^2 and the hinder margin. Every specimen has at least some blue submarginal dots on the upperside of the forewing, these dots being either contiguous with the white marginal spots, or standing separate; they are in pairs, and are in some of Schrader's Salomona specimens very conspicuous, assuming occasionally a creamy colour. The greyish cloudy scaling so often found in South African specimens of *nireus lyaeus* on the under surface near the apex of the forewing and proximally of the middle of the hindwing is indicated in Neumann's Sidamo individual, and quite distinct in some of Schrader's Salomona examples.

There are apparently no constant differences in the sexual armature of the three subspecies of *P. nireus*. The clasper is triangular. The harpe consists of a longitudinal and a vertical process. The longitudinal one is an elongate flattened piece of chitin, which lies flat on the clasper, reaching to the end of the latter. It is dentate at the apex. The vertical process is a proximal dilatation of the upper edge of the longitudinal one. Its upper edge is either truncate or sinuate, and more or less densely dentate, seldom simple. The distal angle of this ridge-like process is often produced distad. In *pseudonireus* the longitudinal process is a little more

tapering than in the Western and Eastern subspecies, and the upper edge of the vertical ridge is more or less straight (apart from the teeth). The vertical process is rather obviously variable in *nireus nireus* as well as in *nireus lyaeus*. In our two specimens from near Bandawe, Lake Nyassa, it is sinuate, but not denticulate. In West African specimens it is often strongly produced distad, while in individuals of *lyaeus* from British East Africa it is not rarely narrow and truncate.

The three Continental subspecies of *P. nireus* are distributed as follows :

a. *P. nireus nireus*.

Papilio Eques nireus Linné, *Syst. Nat.* ed. x. p. 464. n. 38 (1758) (♀, Ind.!).

Sierra Leone to Central Angola, eastwards to the Nandi country, Kavirondo, probably extending to the Eldoma Ravine.

Most of the Congo specimens are large.

b. *P. nireus lyaeus*.

Papilio lyaeus Doubleday, *Ann. Mag. N. H.* xvi. p. 176 (1845) (Afr. austr.).

Papilio lyaeus aelyus Suffert, *Iris* xvii. p. 98 (1904) (German E. Afr.).*

Cape Colony to Southern Angola, northward to the Kikuyu Escarpment, British East Africa, east of the Eldoma Ravine.—Mt. Kenia comes doubtless in the range of this form; we have not seen specimens from there.

The differences on which Suffert relies in the description of *aelyus* are purely individual.

c. *P. nireus pseudonireus*.

Papilio pseudonireus Felder, l.c.

The mountainous regions of Northern Somaliland, northwards to Eritrea.

The ♂ of *nireus* differs constantly from that of *bromius* in the claspers being triangular, as already pointed out by Doubleday in 1845. The vaginal armature of the ♀ is also conspicuously different in the two species, the antevaginal, strongly chitinated, ridge being in *brontes* mesially produced into a denticulate lobe and laterally armed with one long tooth, while the ridge is simple and mesially sinuate in *nireus*. With both species is mixed up in collections a third, of which we know as yet only the ♂. We have described it as *Papilio sosia* in *Nov. Zool.* x. p. 488 (1903).

* *Papilio chraponkshii* Suffert, l.c. t. 2. f. 2 (♂) (Nairobi) is a form of *P. bromius*. We have sixty odd specimens of this form, which, though completely intergrading with *bromius brontes* and *bromius bromius*, must be kept separate as a geographical race confined to the Ravine districts of British East Africa.

Papilio phorcas tippelskirchi Suffert, l.c. p. 96. t. 1. f. 1 is the same as *phorcas ansorgei*, described from the same district in *Nov. Zool.* iii. p. 324 (1896). The insect is common in the hills east and west of the Ravine. The "subspecies" named by Herr Suffert in *Iris* xvii, *Papilio dardanus heimsi*, *d. benio*, *P. cenea maculatus*, *c. discopunctatus*, *c. salaami*, *c. acce*, *P. echerioides rideschi*, *P. cyuorta noreyta*, *P. zenobia noblica*, *P. cypraeapila filaprar*, *c. praeceyola*, *P. hesperus maculatissimus*, *P. mackinnoni immaculatus*, *m. himaculatus*, *P. demodocus docudemo*, *d. albicans*, *P. ophidocephalus phalusco*, *P. pylades lappides*, *P. cyreus nuseyrus*, *P. ucalagon h. jomua*, *P. agamides medosaga*, *P. polices lipomesco* and *P. colona loncoma* are not geographical forms, but individual aberrations. The number of such individual aberrations can be augmented to any extent, because no two individuals are actually identical. The great difficulty in the naming of individual forms is the question where to stop. The number of geographical races, on the contrary, is always limited.

Papilio moebii Suffert appears to be a narrow-banded specimen of *hachei*.

108. *Papilio aethiops* spec. nov.

Papilio nireus, Oberthür (non Linné, 1758, *Ann. Mus. Civ. Genova*, xv. p. 147. n. 3 (1879) (Shoa, vi. vii.; var. A. excl.).

? *Papilio pseudonireus*, Sharpe (non Felder, 1865), *Proc. Zool. Soc. Lond.* p. 528. n. 67 (1896) (Somaliland).

Papilio brontes, ead. (non Godman, 1885), *l.c.* p. 537. n. 84 (1896) (Somaliland).

Papilio nireus var. *lycaeus*, Aurivillius (non Doubleday, 1845), *l.c.* p. 476. sub n. 38 (1899) (partim: Abyssinia); Pagenst., *l.c.* p. 191. n. 4 (1903) (partim).

Papilio bromius var. *brontes*, Auriv., *l.c.* p. 476. sub n. 39 (1899) (partim: Somaliland; Pagenst., *l.c.* p. 191. n. 5 (1903) (litter. and syn. excl.).

♂. Greenish blue band of *upperside* of the forewing as broad as in *P. bromius brontes*, but much more irregular, not widening behind, incised externally at the veins, patch M^1-M^2 convex distally, longer than patch M^2-SM^2 ; patches within cell large, the hinder one with longer upper edge than in *brontes*, the proximal edge of the patch standing mostly at a right angle to the vein; no greenish blue submarginal dots; creamy fringe-spots distinct.—Hindwing: band narrower than in *brontes*, base of cellule M^1-M^2 black, streak $M^2-(SM^1)$ short and narrow; tail much more projecting than in *nireus* and *bromius*, at least twice as long as in those species.

Underside as in *brontes*; but the hindwing bears more or less indistinct traces of pale discal halfmoons (the last spot of this series is the white spot standing near the abdominal margin proximally of the end of SM^2), and the yellowish white postdiscal spots of the same wing not interrupted at the internervular folds, except the last ones.

Clasper less obtuse than in *bromius*, much less triangular than in *nireus*; a fold extends from the apical angle proximad in between the two processes of the harpe. Harpe very different from those of the allied species: it has two processes, one elongate-triangular, large, with the upper edge densely denticulate; the other short, conical, projecting from the lower side of the first near its base.

♀. Differs from *brontes* in a similar way as the ♂. On the underside of the hindwing there is a series of pale bars on the disc between the greyish postdiscal band and the grey central area; these bars are most distinct between R^1 and M^1 , and form the distal border of the brown discal band; bars R^2-M^1 curved, the brown patches at their proximal side small, triangular.

Vaginal armature: antevaginal ridge not concealing the vaginal cavity, being deeply and broadly sinuate in middle; laterally produced into a rather large tooth-like projection.

A long series from: Gara Mulata, near Harar, 27. iii. 1900; Gillet Mts., 1900—2200 m., 29. vi. and 1 & 4. vii. 1900; Badatino to Abuje, Shoa, 28. ix. 1900; Abuje, Shoa, 29. xi. 1900; Lake Abassi, 4. xii. 1900; Koritscha to Tomata, Dara R., Gudji, 24. xii. 1900; Wori to Gamitscha, Kaffa, 5. iii. 1901, *type*; Gamitscha to Anderatscha, Kaffa, 6. iii. 1901; Anderatscha, Kaffa, 7—19. iii. 1901; Budda, Gimirra, 17. iv. 1901.

We have also specimens from Walenso, Gillet Mts., and from Feleklek and other places in Shoa.

Apparently as common in Ethiopia and Northern Somaliland as is *bromius* in other parts of Africa.

In two of our individuals the white postdiscal spots of the underside of the hindwing are shaded over with brown, not contrasting much with the rest of

the wing, reminding one of the Malgassic *Papilio oribazus*. Since *aethiops* differs from *bromius* more than this does from *nireus*, which two insects are certainly specifically distinct from one another, we must treat *aethiops* also as distinct. In structure *aethiops* stands wider off from *bromius* than does *oribazus*.

109. *Papilio similis umanus* subsp. nov.

(?) *Papilio leonidas* Fabr., var. *brasidas*, Pagenstecher (non Felder, 1864). l.c. p. 191. n. 7 (1903).

♂. Upper dirty white line of abdomen thinner than the black line below it. Pale spots of basal half of hindwing reduced, the white spot C SC² in front of cell only 4 mm. long on upperside, somewhat larger below; cell-patch obliquely truncate, extending posteriorly very little beyond point of origin of M², rather more than the apical third of cell being black, the cell-patch smaller below than above; no spot at base of cellule M¹—M²; white streak behind cell narrow and short on underside, not reaching M²; red colour at base of wings, below, reduced.

One ♂ from between Dalba to the Uma River, Konta, 28. ii. 1901.

The specimen recorded as *brasidas* by Pagenstecher, loc. cit., captured at Arbarout by Baron Erlanger, may belong to the same subspecies; we have not seen it. The second specimen recorded in the same list, also as *brasidas*, from Mombasa, 27. vii. 1901, is perhaps the individual of a species of *Papilio* contained in Baron Erlanger's collection labelled "Mombasa, 27. viii. 1901." This individual is neither *similis* nor *brasidas*, but the very distinct *Papilio philonoi*, not mentioned in Pagenstecher's list.

Papilio similis brasidas from South Africa is conspicuously different in most individuals from *P. similis similis*, but some specimens come close to the latter.

We cannot find any constant difference between tropical West and East African specimens of *similis*. The form *interniplaga* seems to us to be based on an aberrant individual. We have no specimen of this aberration.

P. pelopidas, described by Oberthür with some doubt as a variety of *similis* (= *leonidas*), is a distinct species. We have a pair of it from Pemba I. collected by Mr. E. Morland.

Papilio peculiaris Neave, *Nor. Zool.* xi. p. 342. n. 28. t. 1. fig. 7 (Entebbe)* is the Uganda form of *P. cynorta*. The ♂♂ which we have from Entebbe do not differ constantly from West African specimens.

* As Mr. Neave had to leave for Africa when the paper above quoted was being printed, the proof-reading was done rather hurriedly, and consequently a number of misprints were unfortunately not corrected. In the present case the new *Papilio* is named *P. gallicus peculiaris*, though the insect was known not to be a form of *gallicus*.

SOME FURTHER NOTES ON *PULEX CANIS* CURTIS AND *PULEX FELIS* BOUCHÉ.

BY THE HON. N. C. ROTHSCILD, M.A., F.L.S.

IN the *Entomologist's Record** we pointed out some distinctions between the *males* of *P. felis* and *P. canis*. At that time, however, we were unable to give any characteristics by which the *females* of these two species could be distinguished.

Since the publication of the article in question, Mr. Carl Baker,† Dr. William Glen Liston,‡ and Dr. Carlo Tiraboschi§ have maintained that the differences which we mentioned between these two species were unreliable, the gentlemen in question insisting that *P. canis* and *P. felis* were indistinguishable, and were not, as we stated, distinct species. We take this opportunity of reiterating our previous statement, that *P. canis* and *P. felis* are abundantly distinct. The *males* of these two insects can be readily distinguished from each other by differences exhibited in their respective sexual organs, as detailed in our original paper.

We now, however, take the present opportunity of stating that the *females* can be distinguished at a glance by the different shape of their respective heads. The *female* of *P. felis* has a much longer and more pointed head than the *female* of *P. canis*. The "new" variety, which Dr. Carlo Tiraboschi has named var. *murina*,|| is, in fact, the *female* of *P. felis*. The figures A. and B. illustrate the differences between the heads of the *females* of these two species. In the *males* the difference in the shape of the head is less strongly marked, but is quite perceptible.

There are several minor differences in addition, which serve to distinguish these two insects. The first genal spine, and the spine situated at the posterior angle of

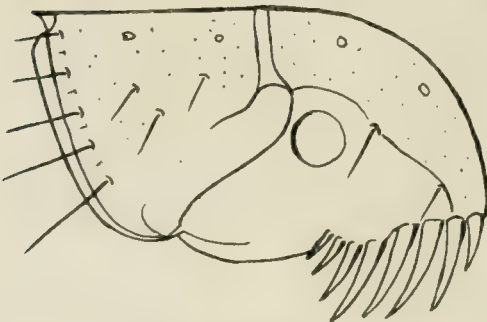


FIG. A. — *Pulex canis*.

the genal process, are shorter in both sexes of *P. canis* than they are in *P. felis*. This distinction Dr. Carlo Tiraboschi has already pointed out in his description of var. *murina* to which we referred above. Dr. Carlo Tiraboschi also states that the antennal club of his var. *murina* bears incisions on one side only. We venture to point out, however, that a similar characteristic can be found in the *female* of *P. canis*, the segments of the club being, on the ventral

side, almost completely fused in the *females* of both species. Again, the abdominal stigmata are larger in *P. canis* than they are in *P. felis*. The hindtibia of *P. canis* bears two bristles at the edge, situated between the fifth and apical dorsal

* Vol. xiii. p. 126, plate (1901).

† *Proc. U. S. Nat. Mus.* xxvii. p. 385 (1904).

‡ In a private letter to the author.

§ *Archiv. Parasit.* viii. p. 254 (1904).

|| *Loc. cit.* p. 260, fig. 17.

pairs, while in *P. felis* there is only a single bristle in this position, the single bristle being generally accompanied by a very minute hair. This hair, though sometimes more proximal in position, is invariably very small, and is placed much nearer to the fifth pair of bristles than to the subapical bristle. The midtarsus is distinctly slenderer in *P. felis* than in *P. canis*, the second segment especially being decidedly narrower. The eighth tergite of the female of *P. felis* is somewhat more rounded at the apex, and the stylet is rather more slender than in *P. canis*. In addition to the above-mentioned differences there are some others which are less constant.

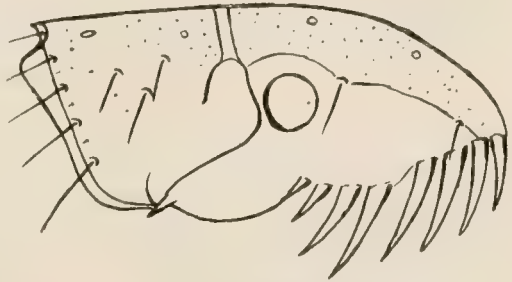


FIG. B.—*Pulex felis*.

The prothoracic comb* usually consists of sixteen or seventeen spines in *P. canis* and seventeen or eighteen in *P. felis*. The metathoracic episternum of *P. felis* bears two or three bristles, while in *P. canis* there are three or four on that plate. The epimerum bears two rows of bristles, numbering in *P. felis* five to eight situated in the first row and five to seven in the second row. In *P. canis* the first row consists of from seven to eleven bristles, while the second consists of from seven to nine. The row of bristles on the inner side of the hindfemur consists in *P. felis* of from seven to ten bristles, while in *P. canis* it consists of from ten to thirteen.

* Dr. Carlo Tiraboschi states, in opposition to other authors, that there are in all his specimens eight genal and eight prothoracic spines on each side in the species which he calls *serratoceps* (which comprises the male of *P. felis* and both sexes of *P. canis*). The number of spines in the prothoracic comb of the specimens which we have examined is not quite constant either in *P. felis* or in *P. canis*.

LIST OF BIRDS COLLECTED IN NORTH-WESTERN AUSTRALIA AND ARNHEM-LAND BY MR. J. T. TUNNEY.

BY ERNST HARTERT, Ph.D.

DURING the years 1901 to 1903 Mr. J. T. Tunney collected mammals and birds in the north-western parts of West Australia and Arnhem Land, the northern portion of what is somewhat incongruously called "Northern Territory of South Australia."

All these districts, especially the latter, belong to the less known ones of Australia, and therefore Mr. Tunney's collections increase our knowledge to some extent. He even discovered a few new forms, in addition to such exceedingly rare birds as *Ptilinopus cincta alligator* and *Petrophassa rufipennis* Collett, the beautiful *Pitta iris*, etc., etc.

The Tring Museum is much indebted to Dr. Bernard Woodward, the curator of the Perth Museum, Western Australia, who arranged the expedition, and to the zeal and industry of Mr. Tunney.

During the work on these birds I came across several open questions which can only be answered by our ornithological friends in Australia, and we hope that they will soon do so. Many collectors are so fond of egg-collecting that they neglect the collecting of birds, even in countries which are quite insufficiently known. The many problems still unsolved with regard to species and subspecies show that this is a great mistake.

I have employed trinomials for forms which agree with others in their main features and at the same time represent them geographically, but there are doubtless more birds which must eventually bear three names; to decide finally about all cases in which trinomials may be used means a thorough study of all Australian birds and their allies. Mr. Campbell, in his admirable book on the nests and eggs of Australian birds, has sometimes recognised such geographical representatives or subspecies, but Australian ornithologists have not yet generally advanced sufficiently to thoroughly study and distinguish the local forms (subspecies) of birds, and to use the eminently practical and short method of trinomial nomenclature. I hope they will not only follow my lead, but employ trinomials even more frequently than I have done in this short and merely informal article. My greetings to our ornithological brethren in Australia—to those I know and to those I hope to know in future!

A complete set of the birds here enumerated is in the Rothschild Museum at Tring, a second one in the Perth Museum, Western Australia, and some have been presented to the British Museum (Natural History), South Kensington, London.

1. *Dromaeus novaehollandiae* (Lath.) (? subsp.).

Casuarinus novaehollandiae Latham, *Ind. Orn.* ii. p. 665 (1790).

2 ♂♂, 1 ♀, Strelly River, N.W. Australia, 1, 4. ix. 1901 (Nos. R. 230, 231, 232).

1 ♀, Shaw River, N.W. Australia, 27. viii. 1901 (No. R. 229).

1 pull. Mary River, Northern Territory, 14. ix. 1902 (No. 929).

2 pull. 40 miles west of Avergne Station, Northern Territory, 25. vi. 1902 (Nos. R. 552, 553).

The material at present at my disposal does not enable me to discuss the question of the existence of one or more subspecies of *Dromaeus novaehollandiae*, but there is no reason why there should not be several. Some specimens are very reddish, but that is evidently not a subspecific character, but due to the reddish soil with which they are smeared.

2. *Megapodius duperreyi tumulus* Gould.

(Cf. *Nov. Zool.* 1901, p. 136.)

11 specimens, Alligator River, September 1903 (Nos. 1631–1641).

M. d. tumulus differs from *M. d. duperreyi* by its darker and more rufous upperside and larger size.

3. *Turnix maculosus* (Temm.).

Hemipodius maculosus Temminck, *Pigeons et Gall.* iii. pp. 631, 757 (1815: Australia).

♂ ad., ♂ pull., South Alligator River, October 1902, April 1903, on the river flats, in the long grass. "Iris white, legs yellow." (Nos. 810, 1177.)

4. *Turnix castanotus* (Gould).

Hemipodius castanotus Gould, *P. Z. S.* 1839. p. 145 (N.W. Australia)

♂ ♀, South Alligator River, and 20 miles west of it, near the hills, on quartzite ground. "Not numerous." (Nos. 1178, 1179.) "Iris and feet yellow."

A specimen from Obogama in N.W. Australia, received from Mr. Robert Hall, is lighter on the back, rump and tail, with the feathers of the back with large black patches.

5. *Turnix velox* Gould.

Hemipodius velox Gould, *P. Z. S.* 1840. p. 150 (interior of N. S. Wales).

1 ♂, 3 ♀ ♀, Nullagine, N.W. Australia, April 1901. "Iris and feet whitish." In flat country, especially on the river flats. (Nos. R. 126 to R. 129.)

6. *Synoicus australis* (Temm.).

Coturnix australis Temminck, *Pigeons et Gall.* iii. pp. 474, 740 (1815: Australia, Capt. Baudin, Paris Museum).

7 ♂ ♀, Lewis Island, July 1901 (Nos. R. 199 to 205).

2 ♂ ♂, Brock's Creek, Northern Territory, August 1902 (Nos. R. 535, 536).

16 ♂ ♀, Alligator River, July to November 1903 (Nos. 801 to 808, 1171A, 1539, 1540, 1650 to 1653, 1716).

7. *Ptilinopus cincta alligator* Collett.

Ptilopus (Leucotreron) alligator Collett, *P. Z. S.* 1898. p. 354 (Alligator River).

♂ ad., in granite ranges ten miles east of South Alligator River, 85 miles from the coast, 10. viii. 1903. "Colour of iris red, leg red." (No. 1536.)

♀ ad., shot in jungle near sandstone cliff at head of west branch of South Alligator River, 22. v. 1903 (No. 1178B).

(Cf. *Nov. Zool.* 1904, p. 179.)

8. **Ptilinopus swainsoni ewingi** Gould.

Ptilinopus ewingi Gould, *P. Z. S.* 1842. p. 19 (Port Essington).

4 ♂♂, 4 ♀♀, (South) Alligator River, 5, 6, 7, 9, 10. x. 1903 (Nos. 1608—1620).
“Caught in jungle at Kaparegoo. Iris orange, legs green, bill greenish.”

9. **Myristicivora spilorrhoea** (Gray).

Carpophaga spilorrhoea G. R. Gray, *P. Z. S.* 1858. pp. 186, 196 (Aru Is. and New Holland—Port Essington).

1 ♀, Mary River, Northern Territory, 12. ix. 1902 (No. 714).

7 ♂♂, 5 ♀♀, South Alligator River, 5, 7. x. 1902, 9, 21. xi. 1902, 21, 22, 30. ix. 1903 (Nos. 1604 to 1607). “Iris brown (black), feet bluish in some, greenish yellow in other specimens.”

10. **Geopelia humeralis** (Temm.).

Columba humeralis Temminck, *Trans. Linn. Soc. London*, xiii. p. 128 (1821: Broad Sound, Australia).

2 ♂♂, 2 ♀♀, Lewis Islands, N.W. Australia, 1. vii. 1901 (Nos. R. 178 to R. 181).

1 ♂, Ord River, East Kimberley, W. Australia, 17. vi. 1902 (No. R. 545).

1 ♀, Brock's Creek, 5. viii. 1902 (No. R. 544).

2 ♂♂, 1 ♀, (South) Alligator River, 2, 7. ix. 1903, 13. xi. 1902 (Nos. 1626, 1627, 1717). “Iris yellow, legs pink, bill bluish.”

11. **Geopelia placida** Gould.

Geopelia placida Gould, *P. Z. S.* 1844. p. 55 (Port Essington).

Geopelia tranquilla Gould, *P. Z. S.* 1844. p. 56 (N. S. Wales).

1 ♂, Derby, 7. iii. 1902 (No. 1625).

2 ♂♂, Margaret River, Derby, W. Australia, 20, 25. iv. 1902 (Nos. R. 502, R. 505).

2 ♂♂, Eureka, Northern Territory, 2, 23. ii. 1903 (Nos. 1082, 1083).

1 ♂, 2 ♀♀, 1 juv., (South) Alligator River, 27. iii., 9, 10. iv., 15. ix. 1903 (Nos. 1301, 1172, 1172b, 1173c).

“Iris white, legs pink. Numerous, found in all parts.”

12. **Geopelia cuneata** (Lath.).

Columba cuneata Latham, *Ind. Orn. Suppl.* p. lxi. no. 8 (1802: “Habitat in Nova Hollandia”).

1 ♂, 2 ♀♀, Derby, 7. iii. 1902 (Nos. 1621 to 1624).

1 ♂, 1 sex ?, Ord River, East Kimberley, 22. v. 1902 (Nos. R. 503, 504).

“Iris red (pink), feet flesh-colour (white), bill dull blue (black).”

13. **Chalcophaps chrysochlora chrysochlora** (Wagl.).

Columba chrysochlora Wagler, *Syst. Av. Columba* spec. 79 (1827: description solely referable to the Australian form. Synonyms and some of the localities—Ceylon, Java, Sumatra, China!—erroneous).

(Cf. *Nov. Zool.* 1904, p. 183.)

2 ♂♂, 1 ♀, South Alligator River, 7, 9. x. 1903 (Nos. 1628, 1629, 1630).

“Iris brown, feet pink.”

14. **Phaps chalcoptera** (Lath.).

Columba chalcoptera Latham, *Ind. Orn.* ii. p. 604 (1790: Norfolk Island.—? errore).

1 ♂, Margaret River, Derby, W.A., 25. iv. 1902 (No. R. 501).

1 ♂, twelve miles from Victoria Station, Northern Territory, 4. vii. 1902 (No. R. 538).

1 ♂, Cullen River, Northern Territory, 24. vii. 1902 (No. R. 539).

1 ♀, Brock's Creek, Northern Territory, 18. viii. 1902 (No. R. 537).

"Iris brown, legs pink, bill black."

15. **Petrophassa rufipennis** Collett.

Petrophassa rufipennis Collett, *P. Z. S.* 1891. p. 354, pl. xxviii. (Arnhem Land, N. Australia).

11 ♂♂, 12 ♀♀, South Alligator River (mostly ten miles east of), July, August 1903 (Nos. 1515 to 1533, 1174D, 1175E, 1176F, 1177G). "Iris and legs brown (legs black). In and near granite ranges, about 85 miles from the coast."

16. **Geophaps smithii** (Jard. & Selby).

Columba smithii Jardine & Selby, *Ill. Orn.* ii. pl. civ. (about 1836: "New Holland," cf. text to pl. ciii.).

♂♀, Cockatoo Springs, East Kimberley, W. Australia, 20. vi. 1902 (Nos. R. 541, 543).

1 ♂, Cullen River, Northern Territory, 24. vii. 1902 (No. R. 542).

2 ♂♂, 1 ♀, South Alligator River, and 25 miles east of S. A. R., 6. xi. 1902, 20. viii. 1903 (No. 716, 1534, 1535).

"Iris white (silvery grey). Legs dull pink. Bill black."

17. **Lophophaps plumifera** (Gould).

Geophaps plumifera Gould, *P. Z. S.* 1842. p. 19 (N.W. coast of Australia).

(*Lophophaps plumifera* Gould, *nec* Salvadori!)

2 ♂♂, 1 ♀, Hall's Creek Road (Derby), 17, 21. iv. 1902 (Nos. R. 507 to R. 509).

2 ♀♀, Margaret River, Derby, 25. iv. 1902 (Nos. R. 510, 511).

2 ♀♀, Fitzroy River, N.W. Australia, 200 miles up the river from Derby, 9. iv. 1902 (Nos. R. 506, 512).

1 ♂, Wyndham District, October 1898 (No. 294).

I am using the name *plumifera* for the birds enumerated as *L. leucogaster* in *Cat. B.* xxi. p. 535. By some error Count Salvadori applied the name *plumifera* wrongly to the bird correctly named *ferruginea*. Gould describes and figures his *plumifera* as having a white pectoral band and abdomen ("centre of the abdomen snow white," cf. *Handb. B. Austr.* ii. p. 136).

Mr. Rothschild has kept specimens of this graceful little Pigeon alive for some years. They do well on seed-food, and are extremely pretty. It is interesting to see, however, what changes are effected in their plumage through being in captivity and in a foreign climate. After some moults in many specimens the cinnamon crest feather and the hinder part of the crown become ashy grey like the forehead, and the entire upper surface becomes darker, in some specimens almost blackish.

This is one out of many examples which might serve to warn authors who are fond of describing "new species" from cage-birds in zoological gardens. No doubt some such forms have really been good new species (for example, *Chrysotis bodini*) but some have so far remained unique, and are likely never to be discovered in a wild state, because they are merely cage-variations.

Whether *L. leucogaster*, described from "Machrihanish Station" in South Australia, is slightly different from the typical N.W. Australian *plumifera*, must remain doubtful, until specimens have been compared, but the figures and description agree so well with N.W. Australian birds, that I am inclined to think they are quite the same. Evidently Gould did not believe in his own "species." It is very amusing to read his excuses for naming it, in the *B. of Australia*.

18. *Lophophaps ferruginea* Gould.

Lophophaps ferruginea Gould, *Handb. B. Australia* ii. pp. 137, 138 (1865: Gascoigne River W. Australia).*

(*Lophophaps plumifera* Salvadori, *Cat. B.* xxi. p. 533, *nec* Gould!)

6 ♂♂, 3 ♀♀, Nullagine (Taylor's Creek), N.W. Australia, April 1901 (Nos. R. 83 to R. 91).

Probably there are only two species of *Lophophaps*: *L. ferruginea*, with a cinnamon abdomen, and *L. plumifera* (= *leucogastra*) with a white abdomen. The specimens of *L. ferruginea* vary somewhat, some being deeper cinnamon, some paler, but this is apparently merely due to freshness of plumage. The specimens collected by Mr. T. Carter at Point Cloates, W. Australia, are rather pale and have very striking grey bases to the feathers of the upper back. It is possible that these belong to a new subspecies.

19. *Ocyphaps lophotes* (Temm.).

Columba lophotes Temminck, *Pl. Col.* 142 (1823: Australia).

1 ♂, Mt. Hatley, Hall's Creek Road, Derby, 16. iv. 1902 (No. R. 499).

♂♀, Soda Springs, Hall's Creek Road, Derby, 23. iv. 1902 (Nos. R. 495, R. 500).

3 ♂♂, Margaret River, 13, 20, 25. iv. 1902 (Nos. R. 494, 496, 497).

1 ♂, Elvira River, 14. v. 1902 (No. R. 498).

2 ♂♂, Avergne Station, Northern Territory, 27. vi. 1902 (Nos. R. 540, E. 546).

"Iris pink. Feet pink. Bill black, pink at base."

(Possibly specimens from N. S. Wales and Victoria are slightly more brownish above, less pale?)

20. *Poliolimnas cinereus* (Vieill.).

Porphyrio cinereus Vieillot, *Nour. Dict.* xxviii. p. 29 (1819. "Pays inconnu." Type from Java, cf. Pucheran, *Rev. & Mag. Zool.* 1851, p. 563).

♀ ad., South Alligator River, 18. xi. 1902 (No. 817). "In reeds near swamp. The only one I have seen here."

♂ ad., Alligator River, 28. x. 1903 (No. 1614). "Sixty miles from the coast."

* In *Cat. B. Brit. Mus.* my friend Count Salvadori says that there is no description (*deser. nulla*) in the *Handbook*. It is true there is no description on p. 137, but there is a detailed one on p. 138 which by some accident was overlooked by the usually most careful of authors of "*Cat. B.*"

21. *Porphyrio melanotus* Temm.

Porphyrio melanotus Temminck, *Man. d'Orn.* ii. p. 701 (1820 : Australia).

6 ad., 2 juv., South Alligator River, September—October 1902, September 1903 (Nos. 978, 984, 1709). “Iris reddish, legs red.”

The Aru birds, generally united with *P. melanotus*, seem to form a distinct race with larger frontal shield and brighter blue underside, but our material is not sufficient at present to form a definite opinion.

22. *Colymbus fluviatilis novaehollandiae* (Steph.).

Podiceps novaehollandiae Stephens, in Shaw's *Gen. Zool.* xiii. pt. 1. p. 18 (1826 : Australia).

1 ♂ ad., Lyon River, 3. iv. 1902 (No. 514).

5 ♂ ♀, immat., South Alligator River, November 1902 (Nos. 917 to 921).

23. *Hydrochelidon hybrida* (Pall.).

Sterna hybrida Pallas, *Orn. Rossa-Asiat.* ii. p. 338 (1811 : S. Volga and Sarpa).

2 ♂♂, (South) Alligator River, 6. xi. 1902, 23. ix. 1903 (Nos. 816, 1645).

24. *Gelocholidon nilotica macrotarsa* (Gould).

[*Sterna nilotica* Gmelin, *Syst. Nat.* i. p. 606 (1788 : ex Hasselquist : Egypt. Cf. *Nor. Zool.* 1902. p. 604.)]

Sterna macrotarsa Gould, *P. Z. S.* 1837. p. 26 (Tasmania).

2 ♂♂, (South) Alligator River, 7. xi. 1902, 29. viii. 1903 (Nos. 815, 1706).

Australian examples may easily be distinguished from European and North African ones by their larger bills, and American ones by their very small beaks.

25. *Hydroprogne caspia* (Pall.).

Sterna caspia Pallas, *Nor. Comm. Petrop.* xiv. i. p. 582, pl. xxii. fig. 2 (1790).

2 ♀♀, Lewis Island, N.W. Australia, 28. vi., 2. vii. 1901 (Nos. R. 186, 187).

“Iris and legs black.”

26. *Sterna dougalli gracilis* Gould.

(Cf. *Nor. Zool.* 1902, p. 594.)

5 ♂♂, 4 ♀♀, Bedout Island, N.W. Australia, 26 to 28. v. 1901 (Nos. R. 26 to R. 34).

27. *Sterna bergii* Licht.

Sterna bergii Licht., *Verz. Doubl.* p. 80 (1823 : Cape of Good Hope).

3 ♂♂, 3 ♀♀, Bedout Island, N.W. Australia, May 1901 (Nos. R. 35 to R. 40). Many of the well-known eggs were found.

28. **Sterna fuliginosa** Gm.

Sterna fuliginosa Gmelin, *Syst. Nat.* i. p. 605 (1788: ex Buffon, Forster, Latham, etc. "Hab. in mari atlantico, americano, indico, australi septentrionali . . .").

5 ♂♂, 5 ♀♀, Bedont Island, N.W. Australia, 20 to 28. v. 1901 (Nos. R. 16 to R. 25).

There are no doubt subspecies also of this bird, but I cannot at present discuss them satisfactorily.

Many eggs were taken.

29. **Anous stolidus pileatus** (Scop.).

(Cf. *Nor. Zool.* 1900, p. 9.)

Apparently the Australian form is the same as that of the North Pacific. Sometimes the forehead is very white.

6 ♂♂, 4 ♀♀, Bedont Island, N.W. Australia, May 1901 (Nos. R. 6 to R. 15).

This bird had also eggs during the visits.

30. **Larus novaehollandiae** Steph.

Larus novaehollandiae Steph., in Shaw's *Gen. Zool.* xiii. pt. i. p. 196 (1826: ex Latham).

1 ♂ juv., Lewis Island, N.W. Australia, 27. vi. 1901 (No. R. 185).

31. **Haematopus unicolor fuliginosus** Gould.

[*Haematopus unicolor* Wagler, *Isis*, 1832, p. 130 (ex Forster's MS., loc. New Zealand).]

Haematopus fuliginosus Gould, *B. Australia* vi. pl. 8 (1845: Australia).

It seems to me that Australian specimens of the black Oyster-catcher can easily be distinguished by their bills being much stouter and more rounded in front on the culmen, not so sharp, knife-like, as in *H. unicolor* from New Zealand.

♀, Lewis Island, N.W. Australia, 1. vii. 1902 (No. R. 188).

32. **Haematopus longirostris** Vieill.

Haematopus longirostris Vieillot, *Nouv. Dict. d'Hist. Nat.* xv. p. 410 (1817: Australia).

1 ♂, 2 ♀♀, Lewis Island, N.W. Australia, 24. vi., 3, 5. vii. 1901 (Nos. R. 182 to R. 184).

1 ♀, Port Headland, 5. viii. 1901 (No. R. 225).

"Iris red, legs pink."

33. **Erythronyctis cinctus** Gould.

Erythronyctis cinctus Gould, *P. Z. S.* 1837. p. 155. ("In Novâ Cambriâ Australi").

♂, South Alligator River, November 1902 (No. 900).

34. **Lobivanellus miles** (Bodd.).

Tringa miles Boddaert, *Tabl. Pl. Enl.* p. 51 (1785: ex Buffon & Brisson. Locality erroneously Louisiana! We may accept Australia as the typical locality.)

8 ♂♀ ad., South Alligator River, 17, 30. x. 1902, 12. xi. 1902, 24. viii., 11. ix. 1903 (Nos. 913 to 916, 1642 to 1644, 1743).

1 ♀ ad., Eureka, 13. i. 1903 (No. 1033).

1 ♂ juv., Hall Creek, 16. iv. 1902 (No. R. 515).

"Iris yellow, legs pink."

35. Ochthodromus veredus (Gould).

Charadrius veredus Gould, *P. Z. S.* 1848, p. 38 (Northern Australia).

2 ♂♂, 8 ♀♀, all in winter plumage, (South) Alligator River, October to November 1902, September 1903 (Nos. 885 to 890, 1775 to 1777, 1780, 1782).

"Iris black (brown), legs yellowish (brown), bill black."

36. Ochthodromus mongolus (Pall.).

Charadrius mongolus Pallas, *Reise*, iii. p. 700 (Mongolia).

1 ♂, Bedout Island, 28. v. 1901 (No. R. 41).

37. Aegialitis ruficapillus (Temm.).

Charadrius ruficapillus Temm., *Pl. Col.* v. pl. 147. fig. 2 (1832: "L'Océanie").

♂ ad., Lewis Island, 4. vii. 1901 (No. R. 194). "Iris brown, legs black."

♀, Derby, 5. iii. 1902 (No. 1606).

38. Aegialitis melanops (Vieill.).

Charadrius melanops Vieillot, *Nouv. Dict. d'Hist. Nat.* xxvii. p. 139 (1818).

♂, Meda Station, Kimberley, 8. ii. 1902. "Iris brown (dark), feet flesh-colour, bill pink at base, black at tip" (No. 400).

♀, South Alligator River, 6. xi. 1902 (No. 897).

39. Himantopus leucocephalus Gould.

Himantopus leucocephalus Gould, *P. Z. S.* 1837, p. 26 ("Australia et insulis Java, Sumatra").

5 ♂♂, 3 ♀♀, South Alligator River, October and November 1902, June and August 1903 (Nos. 907 to 912, 1180, 1707). "Iris and legs red, bill black."

40. Numenius cyanopus Vieill.

Numenius cyanopus Vieillot, *Nouv. Dict. d'Hist. Nat.* viii. p. 306 (1817: Australia).

1 ♂ ad., Derby, W. Australia, 19. xii. 1901 (No. 362).

41. Numenius phaeopus variegatus (Scop.).

(Cf. *Nor. Zool.* 1904, p. 186.)

1 ♀, Derby, W. Australia, 19. xii. 1901 (No. 363).

42. Numenius minutus Gould.

Numenius minutus Gould, *P. Z. S.* 1840, p. 176 (New South Wales).

Mesoscolopax minutus Sharpe, *Cat. B. Brit. Mus.* xxiv. p. 371.

I do not think that it is advisable to separate this bird **generically** on account of the back and sides of the metatarsus being more largely scutellated,

the scutellae not being broken up as in *Numenius*, where these portions are reticulated. If such a character alone is made use of for generic separation, why is it not done with *Heteractitis brevipes* and *incanus*?

1 ♀, Port Headland, 4. x. 1901 (No. R. 306).

4 ♂♂, 6 ♀♀, (South) Alligator River, October and November 1902, September and October 1903 (Nos. 893 to 896, 1778, 1779, 1781, 1783, 1784, 1785).

43. *Heteractitis brevipes* (Vieill.).

Totanus brevipes Vieillot, *Nour. Dict.* vi. p. 410 (1816).

1 ♂, Port Headland, 5. viii. 1901 (No. R. 227).

44. *Heteropygia acuminatus* (Horsf.).

Tringa acuminatus Horsf., *Trans. Linn. Soc. Lond.*, xiii. p. 192 (1821 : Java).

2 ♂♂, (South) Alligator River, 21. x. 1902, 25. ix. 1903 (Nos. 891, 1776).

45. *Hydrallector gallinacea* (Temm.).

Parra gallinacea Temminck, *Pl. Col.* v. pl. 464 (1828).

The ♀ seems really to be larger than the ♂; the young have no black chest.

♂♀, near Mary River, Northern Territory, 12, 22. ix. 1902 (Nos. 820, 828).

5 ♂♂, 6 ♀♀, South Alligator River, October 1902 (Nos. 818, 819, 821 to 827, 829, 829A).

"Iris brown, legs greenish yellow."

46. *Stiltia isabella* (Vieill.).

Glareola isabella Vieillot, *Analyse* p. 69 (1816 : "habite l'Australasie").

3 ♂♂, 5 ♀♀, South Alligator River, October and November 1902 (Nos. 898 to 905). "Iris brown, legs brown."

47. *Burhinus grallarius* (Lath.).

Charadrius grallarius Latham, *Ind. Orn. Suppl.* p. lxvi. (1801 : Australia).

(*Charadrius magnirostris* Latham, *Ind. Orn. Suppl.* p. lxvi. precedes the name *grallarius*, but it is doubtful if the former can be accepted.)

1 ♀, Shaw River, N.W. Australia, 28. viii. 1901 (No. R. 224).

1 ♀, Union, Northern Territory, 27. ix. 1902 (No. 830).

2 ♂♂, 2 ♀♀, South Alligator River, March, May, June 1903 (Nos. 1181 to 1184).

"Iris yellow. Legs pale yellowish olive."

48. *Esacus magnirostris* (Vieill.).

Oedienemus magnirostris Vieillot, *Nour. Dict. d'Hist. Nat.* xxiii. p. 231 ("La Nouvelle Hollande").

1 ♂, 1 ♀, Lewis Island, N.W. Australia, June 1901 (Nos. R. 189, 190).

49. *Eupodotis australis* (J. E. Gray).

Olis australis J. E. Gray, in Griffith's ed. Cuvier's *Animal Kingdom*, Birds, iii. p. 305 (1829 : Australia).

1 ♀, Box Souk, N.W. Australia, 26. ix. 1901 (No. 228).

50. **Antigone australasiana** (Gould).

Antigone australasiana Gould, *B. Austr.* vi., pl. 48 (1848).

1 ♂, Ewaka, Northern Territory, 23. i. 1903 (No. 1054).

7 ♂ ♀, Alligator River, June and August 1903 (Nos. 1345 to 1348, 1807, 1808, one without label). "Iris yellow, legs purplish black."

51. **Ibis molucca** Cuv.

Ibis molucca Cuvier, *Règne Animal*, i. p. 520 (1829),

7 ♂ ♀, South Alligator River, September, October, November 1902, 1903 (Nos. 858 to 862, 876, 1792). "Iris and legs brown."

52. **Carphibis spinicollis** (Jameson).

Ibis spinicollis Jameson, *Edinburgh New Phil. Journ.* xix. p. 213 (1835).

2 ♂ ad., 1 ♂ juv., South Alligator River, 1. xi. 1902, 17. vi. 1903 (Nos. 863, 1185, 1186). "Iris brown, legs dull pink, black in the young."

53. **Plegadis falcinellus** (L.).

Tantalus falcinellus Linnaeus, *Syst. Nat.* ed. xii., 1, p. 241 (1766 : "Hab. in Austria, Italia, circa lacus").

14 ♂ ♀, South Alligator River, October, November 1902, June, September 1903 (Nos. 864 to 873, 1187, 1791).

54. **Platalea regia** Gould.

Platalea regia Gould, *P. Z. S.* 1837. p. 106 ("Novâ Cambriâ, Australia").

7 ♂ ♂ ♀ ♀, South Alligator River, November 1902, October 1903 (Nos. 875, 877, 878, 879, 880, 1786 to 1788). "Iris red, reddish, black, brown."

55. **Xenorhynchus asiatica** (Lath.).

Myrteria asiatica Latham, *Ind. Orn.* ii. p. 670 (1790).

♂ juv., Mary River, 2. x. 1902.

♂ ♀, South Alligator River, November 1902 ; 7 ♂ ♀, June and August 1903 (Nos. 882, 884, 1349, 1802 to 1806).

56. **Ardea sumatrana** Raffl.

Ardea sumatrana Raffles, *Trans. Linn. Soc.* xiii. p. 325 (1822).

1 ♂ juv., South Alligator River, 21. x. 1902 (No. 874). "Iris yellow."

57. **Mesophoyx plumiferus** (Gould).

Herodias plumiferus Gould, *P. Z. S.* 1847. p. 221 (N. S. Wales).

I am inclined to unite the genus *Mesophoyx* with *Herodias* and *Garzetta*. The serrations on the mandible are so fine, the male ornaments not practical as generic characters, the bills so variously shaped, that I cannot see the use of these many genera of *Ardeidae*.

8 ♂ ♀, Alligator River, October 1902, August 1903 (Nos. 848 to 855, 1751).

1 ♂, east of Mary River, Northern Territory, 21. ix. 1902 (No. 847). "Iris yellow, legs black."

58. **Herodias alba timoriensis** Less.

1 ♂ ad., South Alligator River, 16. x. 1902 (No. 857). One without label.

59. **Notophox pacifica** (Lath.).

Ardea pacifica Latham, *Ind. Orn. Suppl.* p. lxx. (1801 : Australia).

♀ ad., South Alligator River, 24. x. 1902 (No. 836). "Iris yellow, legs black."

60. **Notophox picata** (Gould).

Herodias picata Gould, *P. Z. S.* 1845. p. 62 (Port Essington).

I see no reason for rejecting the name *picata*, because there is an *Ardea picata* Raffles (1822), which is a synonym of *Dupetor flavicollis* Lath.

16 ♂ ♀, 1 juv., Alligator River, October, November 1902, September 1903 (Nos. 837 to 848, 1744 to 1750). "Iris yellow, legs yellow." On the open river flats.

61. **Demiegretta sacra** (Gm.).

♀ in slate-grey plumage with white throat-stripe, Lewis Island, N.W. Australia, 26. vi. 1901 (No. R. 191).

62. **Butorides javanica stagnatilis** (Gould).

Ardetta stagnatilis Gould, *Proc. Zool. Soc.* 1847. p. 221 (Port Essington).

♂, Derby, W. Australia, 19. xii. 1901 (No. R. 364).

63. **Dupetor flavicollis gouldi** (Bp.).

(Cf. *Nor. Zool.* 1903, p. 63).

♀ ad., South Alligator River, 8. iv. 1903 (No. 1179 *i*).

64. **Nycticorax caledonica** (Gm.).

2 ♀ ad., 4 ♂ juv., Alligator River, October, November 1902 (Nos. 831 to 835, 1708).

1 ♂ ad., 1 ♂ juv., Enreka, Northern Territory, January, February 1903 (Nos. 1034, 1127).

1 ♀ juv., Nullagine River, 17. iv. 1901 (No. R. 149).

1 ♀ ad., Coongan River, N.W. Australia, 5. iv. 1901 (No. R. 150).

65. **Cygnus atrata** (Lath.).

Specimens were received from Onslow, N.W. Australia ; Augusta, S.W. Australia ; Oyster Harbour, Albany, S.W. Australia, all more or less immature. A young in down from T. Carter, obtained near Point Cloates, W. Australia. 26. vii. 1900.

66. **Anseranas semipalmata** (Lath.).

11 ♂ ♀ ad., Alligator River, October 1902, October 1903 (Nos. 937, 939, 941 943, 944, 1711, 1798 to 1801).

1 ♂, 1 ♀, near Mary River, Northern Territory, 22. ix. 1902 (Nos. 938, 941).
"Iris brown, feet yellow."

Many of the specimens have the white under-surface soiled with rust-brown, apparently from water containing iron.

67. **Nettapus pulchellus** Gould.

Nettapus pulchellus Gould, *P. Z. S.* 1841. p. 89 (N. Australia).

3 ♂ ♂, 3 ♀ ♀, South Alligator River, October 1902 (Nos. 931 to 936).

1 ♂, Mary River, Northern Territory, 12. ix. 1902 (No. 930).

3 ♂ ♂, 2 ♀ ♀, Margaret River, Northern Territory, August 1902 (Nos. R. 547 to 551).

Found on most of the watercourses in the parts visited by Mr. Tunney, though not very numerous.

68. **Dendrocygna arcuata** (Horsf.).

Anas arcuata Horsf., *Zool. Res. in Java*, pl. 65 (1822 : Java).

7 ♂ ♀ ad., South Alligator River, October 1902, June 1903 (Nos. 960 to 965, 1191).

2 ad., Meda Station, 27. i. 1902 (Nos. R. 377, 378).

69. **Dendrocygna eytoni** (Eyton).

Leptotarsis eytoni Eyton, *Mon. Anat.* p. 111 (1838 : ex Gould MS.—Australia).

1 ♂, 3 ♀ ♀, South Alligator River, October 1903 (Nos. 1793 to 1796).

1 ♂, Mary River, September 1902 (No. 959).

1 ♂, 1 ♀, Glencoe Station, 3. xii. 1902 (Nos. 957, 958).

1 ♂, Mt. Ringwood, 24. ix. 1902 (No. 966).

1 ♀, Meda Station (Derby), 28. i. 1902 (No. R. 376).

70. **Tadorna radjah rufitergum** subsp. nov.

Anas radjah Garn., *Voy. Coqu.*, *Zool.* i. 2, p. 302 (1828 : Buru).]

Comparing the Australian specimens with our large series from the Moluccan Islands and New Guinea, Mr. Rothschild and I found that the former differ strikingly from the latter (*i.e.* typical *radjah*) by their chestnut or dark chestnut, instead of brownish black upper back.

Type of *T. r. rufitergum* : ♂ ad., South Alligator River, 13. x. 1902. Tunney coll. (No. 975).

Count Salvadori (*Cat. B. Brit. Mus.* xxvii. p. 176) has already drawn attention to the differences of Australian specimens, but has not given a name to them. The larger size of the Australian bird is not constant in a series, though generally noticeable.

12 ♂ ♀ ad., 1 juv., South Alligator River, October—November 1902, June 1903 (Nos. 967 to 977, 1189, 1190). "Iris and legs white."

71. **Anas superciliosa** Gm.

Anas superciliosa Gmelin, *Syst. Nat.* i. p. 537 (1788 : New Zealand).

- 5 ♂ ♀, South Alligator River, October 1902 (Nos. 949 to 953). "Iris brown."
1 ♂, near Mary River, Northern Territory, 22. ix. 1902 (No. 954).
1 ♀ juv., Nullagine Road, 4. v. 1901 (No. R. 152).
2 ♀ juv., Carbana Pool, Nullagine Road, 3. v. 1901 (Nos. R. 153, 154).

72. **Anas gibberifrons** S. Müll.

Anas gibberifrons S. Müller, *Nat. Gesch. Ned. Ind., Land- en Volkenkunde*, p. 159 (1839-44 : Celebes).

- 2 ♂♂, 1 ♀, Alligator River, October—November 1902 (Nos. 945 to 947).
1 ♂, Minnies Pool, Derby, 16. iv. 1902 (No. R. 516).
2 ♂♂, 1 ♀, Condon Road, May 1901 (Nos. 53 to 55).

73. **Stictonetta naevosa** (Gould).

Anas naevosa Gould, *P. Z. S.* 1840. p. 177 (W. Australia).

- 1 ♀ ad., South Alligator River, 10. x. 1902 (No. 948). "Iris brown."

74. **Nyroca australis** Eyton.

Nyroca australis Eyton, *Mon. Anat.* p. 160 (1838 : ex Gould MS.).

- 1 ♂, 1 ♀, 10 miles west of and near South Alligator River, November 1902 (Nos. 955, 956). "Iris white, legs brown."

75. **Phalacrocorax sulcirostris** (Brandt).

- 2 ♀ ♀, South Alligator River, November 1902 (Nos. 922, 923).

76. **Phalacrocorax melanoleucus** (Vieill.).

- 1 ♂ ad., Alligator River, 29. viii. 1903 (No. 1710).

77. **Plotus novaehollandiae** Gould.

- 2 ♂ ad., 2 ♂ juv., 1 ♀, South Alligator River, October—November 1902 (Nos. 925 to 928).

- 1 ♀ ad. (erroneously sexed "♂"), Carbana Pool, Nullagine Road (No. R. 151).

78. **Sula cyanops** (Sund.).

- 2 ♂♂, 3 ♀ ♀, Bedout Island, West Australia, May 1901 (Nos. 51, 52, 56 to 66).
"Iris yellow, legs blue."

79. **Sula sula** (L.).

- 6 ♂♂, 5 ♀ ♀, Bedout Island, West Australia, May 1901 (Nos. 42 to 50, 67 to 69).

80. *Fregata ariel* (Gould).

13 ♂ ♀ ad., Bedout Island, May 1901 (Nos. 70 to 82). "Iris brown, legs red."

Numerous eggs were found, measuring 59.7×41 , 60×45 , 62.7×47.7 , 65×43.5 , 66.7×42.7 , and 70.6×47 mm.

81. *Pelecanus conspicillatus* Temm.

1 ♀, South Alligator River, 20. ix. 1903 (No. 1797).

82. *Astur novaehollandiae* (Gm.).

Falco Novae Hollandiae Gmelin, *Syst. Nat.* i. p. 264 (1781—ex Latham, "New-Holland White Eagle." New Holland).

2 ♂ ♂, 2 ♀ ♀, Alligator River, 6, 10, 27. x. 1903 (Nos. 1752—1755). "Iris red, legs yellow."

1 ♀, Gregory River, Northern Territory, 10. vii. 1902 (No. R. 554).

1 ♀, east of Mary River, Northern Territory, 16. ix. 1902 (No. 692).

83. *Astur fasciatus* Vig. & Horsf. (*approximans* auct.).

Astur fasciatus Vig. & Horsf., *Trans. Linn. Soc. Lond.* xv. p. 181. No. 4 (Australia).

Astur approximans Vig. & Horsf., *Trans. Linn. Soc. Lond.* xv. p. 181. No. 5 (Australia).

The underside of this species is barred with brown and white, the white bars being as wide or a little narrower than the brown ones, which are rufous-brown, with darker edges.

There is a great variation in size, the females alone varying in the wing from 268 to 291 mm. Males are strangely rare in collections, at least adult ones. They are sometimes exactly like the females, only smaller, sometimes, however, much more reddish, but the dark bars of the under-surface paler, more reddish, the white ones narrower. Such specimens are hardly distinguishable from females of *Astur torquatus torquatus* from Timor, except that the bill is smaller. If they really are males they can only be the males of *approximans*. The males are very much smaller, the wings measuring only 228 to 247 mm. Specimens from Queensland, North and North-West Australia, agree fairly well with each other, though somewhat variable.

A specimen shot in the "North of Victoria" is much darker brown above, and the brown bars below are very broad and dark. It is possible that a series shows similar differences, in which case we should distinguish a darker subspecies in Victoria.

Mr. Tunney sent the following specimens :

♀ juv., Eureka, Northern Territory, 10. i. 1903 (No. 982).

♂ ♀ ad., ♀ juv. (the adult ♂ sexed ♀, but doubtless erroneously) (South Alligator River, 12. v., 17. vi., 22. ix. 1903 (Nos. 1198, 1199, 1769).

"♂ ♀ ad. : Iris and legs yellow. Juv. : Iris and legs yellow."

84. *Astur cruentus* Gould.

Astur cruentus Gould, *P. Z. S.* 1842. p. 113 (W. Australia).

1 "♂" Mt. Anderson, W. Kimberley, 20. x. 1901 (No. R. 277).

I have named this specimen *cruentus*, as Sharpe, Robinson, and Australian

authorities have named similar specimens *cruentus*. They are underneath light rusty cinnamon with narrow white bars. The rufous band on the hind-neck is wide and uninterrupted. The wing of this bird (marked ♂) measures 270 mm., that of a female from Point Cloates 310 mm.

It is possible that these birds do not belong to *A. cruentus*, though it is by no means certain. Mr. Rothschild thinks they must be the same, since the variation of *A. fasciatus* (= *approximans*) and that of *torquatus* from Timor is considerable.

85. *Accipiter cirrocephalus* (Vieill.).

Sparvius cirrocephalus Vieillot, *Nouv. Dict. d'Hist. Nat.* x. p. 329 (1817—Australia).

1 ♀ ad., Brock's Creek, 6. viii. 1902 (No. R. 556. "Iris and feet yellow, bill black."

1 ♀ ad., 2 ♀ ♀ juv., 1 ♂ juv., South Alligator River, 17. xi. 1902, 19. x. 1903 (Nos. 694, 1766, 1767, 1768).

It is truly strange how entirely similar this *Accipiter* is to *Astur fasciatus* (= *approximans*). In some cases absolutely nothing serves to distinguish a ♂ *Astur* from a ♀ *Accipiter* (adult and young), except the smaller bill of the latter and its long thin toes. While the inner toe (without claw) in the *Astur* reaches much beyond the first joint of the middle toe, often as far as the second one, it only reaches the first joint in the *Accipiter*.

86. *Haliaetus leucogaster* (Gm.).

Falco leucogaster, Gmelin, *Syst. Nat.* i. p. 257 (1788—ex Latham. Locality unknown).

♂ ♀ ad., ♂ ♀ juv., South Alligator River, October and November 1902, June and October 1903 (Nos. 690, 691, 1192, 1193, 1774).

All these specimens are very large. Perhaps there is a larger race of the White-bellied Sea Eagle in Australia!

87. *Haliastur indus girrenera* (Vieill.).

♀ ad., Derby, 6. iii. 1902 (No. 1756).

88. *Haliastur sphenurus* (Vieill.).

Melvus affinis Gould, *P. Z. S.* 1837. p. 140 (Australia).

♀ juv., South Alligator River, 6. vi. 1903 (No. 1194).

89. *Elanus axillaris* (Lath.).

Falco axillaris Latham, *Ind. Orn. Suppl.* i. p. ix. (1801; "habitat in Nova Hollandia").

5 ♂ ♀ ad., 3 juv., Alligator River, September and October 1903 (Nos. 1757 to 1763, 1770). "Iris red, legs yellow."

90. *Ieracidea berigora* (Vig. & Horsf.).

Falco berigora Vig. & Horsf., *Trans. Linn. Soc. Lond.* xv. p. 184 (1827—Australia).

♀, Nullagine, 16. iv. 1901 (No. R. 155). Breast and abdomen cinnamon-rufous-brown. Patch in the middle of abdomen whitish with brown bars. "Iris brown, legs bluish."

♀, Argyle Station, East Kimberley, 31. v. 1902 (No. R. 410). Throat, breast, abdomen, and under tail-coverts white, some of the feathers with dark brown shafts, sides tinged with pale rufous and with more regular brown shafts. Thighs rufous-brown.

♂, Condon Rd., 15. v. 1901 (No. R. 1). Throat buff, breast and sides of body brown, with darker shafts, middle of abdomen buff, with dark shaft-lines.

These three specimens have the general colour above rufous and the thighs rufous, and belong thus to the form called *berigora* in *Cat. B.* i. p. 421 (*occidentalis* (Gould)). I doubt whether they are specifically or subspecifically different, but cannot prove the contrary yet.

91. *Ieracidea orientalis* Sharpe.

Falco berigora orientalis Schlegel, *Namannia* 1855 p. 254 (nomen nudum!).

Ieracidea orientalis Sharpe (ex Schl. nom. nud.), *Cat. B.* i. p. 422.

1 ♂, 2 ♀♀, South Alligator River, April and June 1903 (Nos. 1195, 1196, 1197). "Iris brown, legs bluish."

These birds are above dark brown, and have brown thighs, and belong to the birds for which Dr. Sharpe adopted the name *orientalis*.

A specimen from the Fitzroy River, N.W. Australia, received from Mr. Robert Hall, is below like this dark bird, but above decidedly rufous! I appeal to the Australian field-naturalists to study these birds, and to collect series of paired adult birds and their young, in order to find out if they are mere aberrations (so-called "phases") or species. They do not seem to be geographical representatives (sub-species), and I doubt whether they are species.

92. *Falco lunulatus* Lath.

Falco lunulatus Latham, *Ind. Orn. Suppl.* p. xiii (1801—Australia).

1 ♀, Brock's Creek, Northern Territory, 19. viii. 1902 (No. R. 555).

2 ♂♂, 1 ♀, Alligator River, 24. ix. 1902, 10, 29. ix. 1903 (Nos. 693, 1764, 1765). "Iris brown, feet yellow."

93. *Cerchneis cenchroides* (Vig. & Horsf.).

Falco cenchroides Vigors & Horsfield, *Trans. Linn. Soc.* xv. p. 183 (1826—Australia).

1 ♀, Eureka River, Northern Territory, 6. ii. 1903 (No. 1056).

94. *Pandion haliaetus leucocephalus* Gould.

♂♀, Lewis Island, N.W. Australia, 25, 26. vi. 1901 (Nos. R. 168, 169).

95. *Ninox connivens occidentalis* Rams.

Ninox connivens-occidentalis Ramsay, *Proc. Linn. Soc. N.S. Wales* i. (2). p. 1086 (1886—N.W. Australia).

♂♀, Yeeda Creek, W. Kimberley, 23. xi. 1901 (Nos. 275, 276).

♂, Margaret Crossing, Hall's Creek Rd. 19. iv. 1902 (No. R. 411). "Iris and feet yellow, bill blackish, base and under-mandible yellow. Found on most of the rivers of this part of Australia, but not numerous."

5 ♂♂, 1 ♀ (South) Alligator River, June, August, September, November 1902, 1903 (Nos. 191, 1204, 1205, 1771 to 1773).

1 ♂, 1 pullus, near Mary River, Northern Territory, 14, 16. ix. 1902 (Nos. 700, 702).

The Western form is smaller, above paler, the stripes on the nunderside always much more rusty than in *N. v. connexus*, though the latter vary, being sometimes lighter, sometimes darker.

96. *Ninox boobook ocellata* (Hombr. & Jacq.).

Athene ocellata Hombr. & Jacq., *Voy. Pole Sud*, Zool. iii. p. 51. pl. 3. fig. 2 ("Chili"—errore!)

1 ♀, Soda Springs, Hall's Creek Road, 24. iv. 1902 (No. R. 412). "Iris light brown, feet white, bill bluish at base, blackish at tip."

2 ♂♂, 2 ♀♀ (South) Alligator River, April, May, June, August 1903 (Nos. 1206, 1207, 1208, 1512).

1 ♀, Eureka, Northern Territory, 15. i. 1903 (No. R. 978).

These birds vary very much in colour, but are always distinguishable from *N. boobook boobook* by their much lighter and more reddish colour. *N. lurida* de Vis is most likely only an extremely reddish example of *ocellata*. Judging from the description, we have several like it. *N. b. ocellata* reaches to Northern Queensland, while Southern and Middle Queensland still have *N. b. boobook*. I do not know Salvadori's *peninsularis* from Cape York.

97. *Ninox rufa rufa* (Gould).

Athene rufa Gould, *P.Z.S.* 1846. p. 18 (Port Essington).

2 ♂♂, 2 ♀♀, South Alligator River, 80 miles from the coast, August, October, November 1902 (Nos. 697, 698, 699, 1511). "Iris yellow, legs yellow."

Gould's *Ninox rufa* has evidently been erroneously united with *N. strenua* in the *Cat. B.* ii., and, unfortunately, this error is repeated in the *Hand-List*, vol. i. I have before me a series of adult *strenua* and of equally adult *rufa*.

Ninox rufa rufa inhabits N.W. Australia. Specimens from the Cape York Peninsula and North Queensland seem to be smaller, and should probably be separable subspecifically. I have, however, only seen two, and I hesitate to name this form from such a small material. These Cape York specimens have apparently been identified with *Ninox rufa humeralis* from New Guinea, but the latter is darker and still smaller than the North Queensland examples, which agree in colour with Western *rufa*.

98. *Strix novaehollandiae* Steph.

Strix novae hollandiae Stephens, *Gen. Zool.* xiii. 2. p. 61 (ex Latham, *Gen. Hist. B.* i. p. 358. "Mouse Owl." "Inhabits New Holland").

♂♀, South Alligator River, 8. x. 1902, 29. vi. 1903 (Nos. 695, 1201). "Iris black, feet brown." The female is heavily marked with spots and triangular marks of blackish brown along the sides, while the male has the underside white with only a few small round brown spots.

99. *Strix flammea delicatula* Gould.

Strix delicatula Gould, *P.Z.S.* 1836. p. 140 (Australia).

2 ♂♂, Lewis Island, N.W. Australia, 6. vii. 1901 (Nos. R. 170, 171).

♂ ♀, South Alligator River, 24. 26. vi. 1903 (Nos. 1202, 1203).

1 ♀, near Gregory River, Northern Territory, 9. vii. 1902 (No. R. 557). "Iris black, legs brown."

100. *Trichoglossus haematodus rubritorquis* Vig. & Horsf.

Trichoglossus rubritorquis Vigors & Horsfield, *Trans. Linn. Soc.* xv. p. 291 (1826 : Australia).
(Cf. *Nov. Zool.* 1901, p. 68.)

2 ♂♂, 1 ♀, Derby, March 1902 (Nos. 1737, 1738, 1739).

2 ♀♀, South Alligator River, March 1903 (Nos. 1221, 1222).

1 ♂, 2 ♀♀, Eureka, Northern Territory, January, February 1903 (Nos. 1018, 1091, 1092). "Iris red, legs brownish, bill red."

Mr. Le Souëf sent us a specimen from the Katherine River in North Australia.

101. *Trichoglossus versicolor* Vigors.

Trichoglossus versicolor Vigors, in Lear's *Ill. Parr.* pl. 36 (1832 : No locality).
(Cf. *Bull. B. O. Club* xiv. p. 10, October 1903.)

2 ♂♂, Mt. Anderson, W. Kimberley, 21. xi. 1901 (Nos. R. 296, 297).

1 ♂, 4 ♀♀ imm. on the road to the Alligator River, 30. ix. 1902 (Nos. 777 to 781).

1 ♂, Nellie Creek, Northern Territory, 15. ii. 1903 (No. 1095).

5 ♂♂, 2 ♀♀, South Alligator River, October 1902, March and April 1903 (Nos. 780, 1224 to 1229). "Ad.: Iris reddish (reddish brown), feet bluish (blue-black). Juv. : Iris brown."

Mr. Robert Hall sent us specimens from Derby, W. Australia, and we have others from Somerset, Cape York (Jardine coll.) and Cooktown (Olive coll.)

102. *Cacatua galeritus* (Lath.).

Psittacus galeritus Latham, *Ind. Orn.* i. p. 109 (1790 : N. S. Wales).

2 ♂♂, South Alligator River, November 1902 (Nos. 774, 775).

2 ♂♀, Behn River, E. Kimberley, W. Australia. 29. v. 1902 (Nos. 489, 490).

2 ♂♀, Eureka, Northern Territory, 6. ii., 6. iii. 1903 (Nos. 1130, 1131). "Iris red, legs black." "Found on most of the larger watercourses, but not numerous."

103. *Cacatua gymnopsis* Sel.

Cacatua gymnopsis Selater, *P.Z.S.* 1871. pp. 490, 493 (Locality unknown. As the typical locality we have to consider "Depot Creek, South Australia," Sturt coll.)

2 ♂♀, Flora Valley, May 1902 (Nos. 491, 492).

3 ♀♀, Alligator River, 60 miles from the coast, 26. x. 1903 (Nos. 1732, 1733, 1735).

1 ♂, 2 ♀ ♀, South Alligator River, March and October 1903 (Nos. 1734, 1742, one without number). "Iris brown, legs black."

1 ♂, 1 ♀, Eureka, Northern Territory, 24, 25. ii. 1903 (Nos. 1128, 1129).

104. *Cacatua roseicapilla* Vieill.

Cacatua roseicapilla Vieillot, *Nour. Dict.* xvii. p. 12 (1817 : "Je soupçonne qu'il a été trouvé dans les Indes").

6 ♂ ♀, Alligator River, November 1902, June, August, October 1903 (Nos. 773, 1215 to 1217, 1730, 1731). "Iris hazel, orbits grey, bill yellowish, legs and feet mealy grey" (T. Carter).

105. *Calyptorhynchus banksii macrorhynchus* Gould.

Calyptorhynchus macrorhynchus Gould, *P.Z.S.* 1842. p. 138 (Port Essington).

It seems, indeed, that the specimens from N. W. Australia have larger bills than those from Queensland and N. S. Wales, but the specimens from Rockingham Bay belong to the latter, smaller-billed race, and not to *macrorhynchus*.

10 ♂ ♀, Alligator River, November 1902, June, July, August, October 1903 (Nos. 772, 1209 to 1213, 1514, 1728, 1729). "Iris brown, legs black."

106. *Calopsitta novaehollandiae* (Gm.).

Psittacus novaehollandiae Gmelin, *Syst. Nat.* i. p. 328 (1788 : Australia).

♂ ad. found dead at Derby 4. iii. 1902. "Feet and bill black." (No. 1740.)

107. *Ptilines erythropterus coccineopterus* Gould (?).

Ptilines coccineopterus Gould, *Handb. B. Austr.* ii. p. 39 (1865 : typical locality Port Essington).

It seems to me that northern and western specimens are smaller than eastern ones, but the differences are very slight. None of our western birds have the wings longer than 196 mm., while eastern ones range to at least 201 mm. There is, however, much variation. The differences in colour suggested by Mr. Le Souëf (*Ibis*, 1899, p. 360) do not exist (cf. *Ibis*, 1900, p. 645).

♂ ♀, Fitzroy River (Derby), 4. xii. 1901 (Nos. R. 298, 299).

♀ Soda Spring, Hall's Creek Road, 23. iv. 1902 (No. R. 479).

♂, Margaret River, Hall's Creek Road, 19. iv. 1902 (No. R. 480).

2 ♂♂ ad., 1 ♂ juv. or ♀, Hall's Creek Road (Derby), 17, 18. iv. 1902 (Nos. R. 481, 482, 485).

2 ♀ ♀, Behn River, East Kimberley, 29. v. 1902 (Nos. R. 483, 484).

3 ♂♂, Eureka, Northern Territory, January 1903 (Nos. 1019, 1020, 1021).

♂ ♀, South Alligator River, 6. iv. 1903 ; 9. x. 1903 (Nos. 1223, 1736).

108. *Platycercus icterotis xanthogenys* Salvad. (?)

Platycercus xanthogenys Salvadori, *P.Z.S.* 1891. p. 129 ; *Cat. B. Brit. Mus.* xx. pl. xvi. (Habitat unknown!).

Count Salvadori described his *P. xanthogenys* from a single old skin (Gould collection) without locality. The adult males from Beaufort and Cranbrook have

the feathers of the upper back broadly edged with red, and the tail-feathers, even the central pair on their outer webs, are blue or bluish. They would therefore seem to belong to *P. xanthogenys*, which may be subspecifically different from *P. icterotis*. Unfortunately, however, the habitat of the type of *xanthogenys* is unknown, and so is the distribution of the true *icterotis*, if that is really distinct. We have specimens which must be true *icterotis*, but their locality is uncertain. The wings of the adult (supposed) *xanthogenys* measure 140 to 143 mm. The rump is dull pale green, not greyish.

More information about these yellow-cheeked parakeets is sadly wanted, and we hope that Mr. North or other Australian ornithologists will soon discuss them fully—not from vague observations, but with the help of properly collected series of skins from all parts of Australia where they occur.

109. *Platycercus brownii* (Temm.).

Psittacus Brownii Temminck, *Trans. Linn. Soc.* xiii. p. 119 (1821 : Arnhem Land).

2 ♂♂, 3 ♀♀, 150 miles from Wyndham, Ord River, W. Australia, May 1902 (Nos. R. 474 to R. 478).

1 ♂, Burundie, Northern Territory, 28. vii. 1902 (No. R. 558).

3 ♂♂, 1 ♀, South Alligator River, May, July and August 1903 (Nos. 1218 to 1220, 1561).

1 ♀, Alligator River, October 1903 (No. 1741).

2 ♂♂, Eureka, Northern Territory, February 1903 (Nos. 1086, 1088).

4 ♂♂, 1 ♀, Nellie Creek, Northern Territory, February 1903 (Nos. 1084, 1085, 1087, 1089, 1090).

The series of this rare Parrot is very interesting. Though these facts are not all absolutely proved by moulting specimens, I can only come to the following conclusions :—

The red-crowned examples, in which all the feathers of the crown have wide yellowish red or pure red margins, are immature. The specimens with the feathers of the under-surface quite yellow, with only a very narrow ashy grey margin and the utmost base pale grey, are more or less immature or females, which do not seem to get the black-based breast-feathers of the adult males. Younger birds have the feathers of the back pale yellow with a large round black spot in the middle, while adult birds have this spot so much extended that the feathers may be described as black with a yellow border. Females are considerably smaller than males. The young and females have often some red spots on the lower throat and in the middle of the abdomen.

110. *Barnardius zonarius occidentalis* North.

Barnardius occidentalis North, *Rec. Austr. Mus.* ii. p. 83 (1893 : N.W. Australia).

1 ♂, Nullagine River, 19. iv. 1901 (No. R. 103). "Iris brown, legs blackish."

B. zonarius occidentalis is a very distinct race of *B. zonarius*, replacing *B. zonarius zonarius* in North-Western Australia. Mr. Tom Carter sent us specimens of *occidentalis* from Point Cloates. "Iris dark hazel, bill bluish horn, legs and feet dark lead-grey" (Carter in litt.).

111. *Psephotus dissimilis* ??

Psephotus dissimilis Collett, *P.Z.S.* 1898, p. 356 (Mary River, Arnhem Land).

♂ ♀. Nellie Creek, Northern Territory, 9. ii. 1903 (Nos. 1093, 1094). "Iris brown, legs greyish. On granite hills, not numerous."

These two valuable specimens agree with Professor Collett's description, except that the crown of the *male* is dark brown, not at all chestnut, and that the verditer blue does not meet in a ring across the nape. The description of the *female* agrees perfectly. It is not *P. chrysopteropygius* Gould, because it lacks the yellow band across the forehead.

112. *Melopsittacus undulatus* (Shaw).

Psittacus undulatus Shaw, *Nat. Misc.* xvi. pl. 673 (1789-1813).

♀ ad., Soda Spring, Kimberley, 24. iv. 1902. "Iris white; feet and bill bluish" (No. R. 486).

113. *Eurystomus orientalis australis*.

♀ juv., Eureka, Northern Territory, 23. ii. 1903 (No. 1096).

♀, Fitzroy River, Kimberley, 11. xi. 1901 (No. R. 280).

♂, Derby, 8. iv. 1902 (No. R. 513).

3 ♂♂, 2 ♀♀, South Alligator River, September, October and November 1902 (Nos. 1702 to 1706).

114. *Alcyone azurea pulchra* (Gould).

Alcyone pulchra Gould, *P.Z.S.* 1846, p. 19 (Port Essington).

♀, Mary River, Northern Territory, 12. ix. 1902 (No. 771).

♀, "The Brook," fifteen miles from Ord Station, 19. v. 1902 (No. R. 451).
"Iris brown, feet pink, bill black."

2 ♂♂, South Alligator River, October, November 1902 (Nos. 768, 769). One without label.

115. *Dacelo leachii cervina* Gould.

[*Dacelo leachii* Vigors & Horsfield, *Trans. Linn. Soc. Lond.* xv. p. 205 (1827: ex Latham MS. "East coast of Australia").]

Dacelo cervina Gould, *B. Australia*, ii. pl. 20 (1844: "Northern and North-western portions of Australia").

This form of *D. leachii*, though easily recognisable if a series is compared, cannot always be separated if single specimens are picked out. The distribution is by no means clear! It can only be a geographical representative (= subspecies), and probably replaces *D. l. leachii* in the more western portions of North Australia and in West Australia. Examples from the Gulf of Carpentaria and Cape York seem to be sometimes intermediate.

Mr. Tunney collected the following specimens:—

♀, Condon Road, 15. v. 1901 (No. R. 2).

♂, Ord River, W. Australia, 17. vi. 1902 (No. R. 566).

♂, Soda Springs, Hall's Creek Road, 23. iv. 1902 (No. R. 453).

♂, 240 miles post, Hall's Creek Road, 22. iv. 1902 (No. R. 452).

2 ♂♂, 2 ♀♀, Brock's Creek, Northern Territory, August 1902 (Nos. R. 364, 563, 565, 567). "Iris ♂♀ white, feet dull yellowish. Upper mandible dark brown, lower light."

♀, Nullagine, N.W. Australia, 23. iv. 1901 (No. R. 104).

♀, South Alligator River, 21. x. 1902 (No. 761).

All these are typical *cervina* !

116. *Halcyon pyrrhopygia* Gould.

Halcyon pyrrhopygia Gould, *P.Z.S.* 1840. p. 113 ("Interior of New South Wales").

♂♀ ad., Brock's Creek, Northern Territory, 2, 3. viii. 1902 (Nos. R. 574, 575).

♂ juv., Eureka, Northern Territory, 20. ii. 1903 (No. 1098).

The adult ♀ differs from the ♂ in being much duller above, not so blue, the crown of a brownish grey instead of ashy blue, with the white edges to the feathers more apparent. The young *male* is above as bluish as the adult *male*, but the lesser and median wing-coverts have brownish-buff tips; the greater series has white tips; the feathers of the chest have blackish fringes. "Iris brown, feet blackish."

117. *Halcyon sancta* Vig. & Horsf.

Halcyon sancta Vigors & Horsfield, *Trans. Linn. Soc. Lond.* xv. p. 206 (1826: Australia).

♂, Derby, 7. xii. 1901 (No. R. 284).

1 ♂, 2 ♀♀, Eureka, Northern Territory, January and February 1903 (Nos. R. 979, 1097, 1099).

♀, Alligator River, 27. x. 1903 (No. 1598).

118. *Halcyon macleayii* Jard. & Selby.

Halcyon macleayii Jardine & Selby, *Ill. Orn.* pl. 101 (1825-39: no locality stated!).

2 ♂♂, 1 ♀, Margaret River, August 1902 (Nos. R. 571, 572, 573).

1 ♂, 2 ♀♀, Brock's Creek, Northern Territory, July and August 1902 (Nos. R. 568, 569, 570).

♂♀, East of Mary River, Northern Territory, September 1902 (Nos. 762, 767).

♂, Koolwonga, Northern Territory, 7. ix. 1902 (No. 765).

3 ♂♂, 2 ♀♀, South Alligator River, October 1902—March 1903 (Nos. 763, 764, 766, 1239, 1240).

♂, Alligator River, 18. v. 1903 (No. 1238).

119. *Merops ornatus* Lath.

Merops ornatus Latham, *Ind. Orn. Suppl.* p. xxxv. (1811: Australia).

♀, Brock's Creek, Northern Territory, 4. viii. 1902 (No. R. 562).

♂, South Alligator River, 10. iii. 1903 (No. 1237).

120. *Podargus phalaenoides* Gould.

Podargus phalaenoides Gould, *P.Z.S.* 1839. p. 142 ("The North-west coast of Australia").

♂, Shaw River, N.W. Australia, 28. viii. 1901 (No. R. 226).

♂, Derby, 10. iii. 1902 (No. 1660).

♂♀, South Alligator River, August 1903 (No. 1537, 1538).

I do not at all consider the question of the various Australian forms of *Podargus* quite satisfactorily settled, but it seems to me that the *Podargus strigoides*, which inhabits the greater part of Queensland, New South Wales, Victoria, South Australia and Tasmania (from where I have no examples before me), is represented in Western and Northern Australia, eastwards to North Queensland, by a generally smaller and lighter, more delicately marked subspecies, *P. phalaenoides* of Gould, though sometimes individuals cannot easily be distinguished, and some are quite intermediate. Australian ornithologists should begin to investigate this question thoroughly! Gould himself appealed to field-ornithologists to investigate whether the differences in colour were due to the sex of the specimens. I, in 1892, said, "It must be left to Australian field-ornithologists to study these forms carefully," and I must repeat this once more. I believe, however, that if good series are collected by competent ornithologists, it will be found that the following forms occur in Australia:

Podargus papuensis: a New Guinea species, only extending to the Cape York Peninsula, rarely farther south.

Podargus ocellatus marmoratus: a subspecies of the Papuan *P. o. ocellatus*, found in Northern (and Eastern) Australia.

Podargus strigoides strigoides: roughly speaking, the Eastern portion of Australia. There is every possible intergradation between the various aberrations, only *phalaenoides* being more or less separated and having another distribution.

Podargus strigoides phalaenoides: a Western and Northern form of *strigoides*,

Here is an interesting piece of work for our Australian friends. Opinions cannot settle such questions. Such remarks as, "I am not yet prepared to admit that . . ." do not bring us any further. *Hic Rhodus, hic salta!*

121. *Aegotheles novaehollandiae* (? *leucogaster*).

[*Aegotheles leucogaster* Gould, *P.Z.S.* 1844, p. 106 (Port Essington).]

When I wrote the catalogue of the *Podargidae* in the British Museum (*Cat. B.* xvi., 1892) I could not make out that two subspecies could be distinguished in Australia, but the material available was absolutely inadequate. I am now of opinion, from what I have recently seen, that it is after all possible that two forms, a more southern and eastern, which I should call the true *novaehollandiae*, and a more northern and western one, which would be *leucogaster* of Gould, can be distinguished.

Recently Mr. Robert Hall has described as new a form from the Fitzroy River, first naming it *Ae. rufescens*; afterwards, having found out that the name *rufescens* was already used for another species, renaming it *Ae. rufa* (*Victorian Naturalist*, xviii, pp. 60, 89, 1902). Locality and description suggest *a priori* that Mr. Hall's supposed new form (if different from *Ae. novaehollandiae novaehollandiae*, is Gould's *leucogaster*. The series now before me—*i.e.* the specimens collected by Mr. Tunney, some from Point Cloates collected by Mr. Tom Carter, and some from Northern Queensland—show beyond doubt that the rufous-cinnamon examples are not specifically different from the grey ones, for we have all intermediates between both forms from the same districts. Thus Mr. Hall created two new synonyms at once. The question only remains whether there are two subspecies; and I believe that one should distinguish the north-western ones as *leucogaster*, because they are mostly lighter and larger, and cinnamon examples are more frequently found among

them. There is, however, no adequate series from S.E. Australia in England, and I must therefore again appeal to Australian ornithologists to settle the question. If they send me a good series from New South Wales, etc., I shall be glad to give my opinion. Mr. Hall has evidently most insufficiently studied the individual variation of the species, for several of his characters (as, for example, the number of bars on the tail!) are the most variable ones. A bird from Gracefield, Cranbrook (S.W. Australia) is a typical *novae-hollandiae*.

Mr. Tunney sent the following specimens :

♀, Hall's Creek Road, E. Kimberley, 25. iv. 1902 (No. 454).

♂, ♀ ♀, 150 miles from Wyndham, Ord Station Road, 23, 26. v. 1902 (Nos. 455, 456). One of these specimens is almost entirely white underneath.

♂, Ord River, 16. vi. 1902 (No. R. 160).

♀, Avergne Station, Northern Territory, 26. vi. 1902 (No. R. 560).

2 ♂♂, 3 ♀♀, South Alligator River, 22. x. 1902, 31. iii. 1903, and May 1903 (Nos. 811, 1232 to 1236).

"Iris brown, legs creamy or brownish cream, claws dark brown or black. Bill fleshy at base, dark brown at tip."

Mr. Tunney says : "Found in hollow trees during the day. Can be procured by striking tree with stone, when it flies out and is easily shot. Food found in stomachs consisted chiefly of red ants. Not numerous."

The sexes do not seem to differ conspicuously.

122. *Eurostopodus argus* Hart.

Eurostopodus argus Hartert (ex Rosenberg, nomen nudum), *Cat. B. Brit. Mus.* xvi, p. 608 (Australia and Aru Islands).

♂, Newly River, Northern Territory, 23. vi. 1902 (No. R. 559).

♂, South Alligator River, 12. vi. 1903 (No. 1231).

♀, 20 miles west of Alligator River, 8. viii. 1903 (No. 1230).

The ♂ No. 1231 is strongly cinnamon-rufous on parts of the head, back, scapulars and wing-coverts. Evidently these reddish feathers are due to youth, being replaced in moult by the feathers of the well-known plumage of the adult.

123. *Caprimulgus macrurus* Horsf.

♀, Alligator River, 5. x. 1903 (No. 1613).

124. *Cuculus variegatus* Vieill.

Cuculus variegatus Vieillot, *Nour. Dict. d'Hist. Nat.* viii. (1817.—"Il se trouve dans l'Australasie.")

We learn from Pucheran (*Rev. de Mag. de Zool.* 1852, pp. 555, 556) that the types were brought home by Maugé, from the voyage to the Southern Lands ("terres australes") under Péron et Lesueur, and that they are, like the majority of the specimens, presented by Maugé as coming from Timor. Most likely there is an error in the locality, and the types came from Australia).

I believe we can use Vieillot's name *variegatus* (though I admit that the description is not at all convincing), if we accept Pucheran's statements, *loc.* How, on the other hand, Latham's name *Columba pallida* came to be accepted for this cuckoo, is incomprehensible. It would seem that Messrs. Cabanis & Heine

(*Mus. Hein.* iv. p. 26) have first been guilty of it. Their quotation, and also the one in the *Cat. B.* xix. p. 261, most likely copied without verification, is wrong, because the name *Columba pallida* is first given in the *Ind. Orn. Suppl.* p. lx (1801) and not in the *Syn. Suppl.* ii. p. 270, where it is only called the "Pale Pigeon." There is hardly anything in Latham's description that refers to the cuckoo in question; but what disagrees most is the description of the tail, which is said to be "very pale or whitish" with "the two middle tail-feathers dusky," and that of the wings.

Mr. Tunney sent two young specimens:—

♂, 10. iii. 1902, Derby (No. 1646).

♀, 27. iii. 1903, South Alligator River (No. 1241).

125. *Cacomantis variolosus* (Horsf.).

Cuculus variolosus Horsfield, *Trans. Linn. Soc. Lond.* xv. p. 300 (1826: Australia).

♂ ad., caught in jungle at Kaparegoo on the South Alligator River, 6. x. 1903 (No. 1644).

♂ ad., shot in the river bed, Alligator River, 19. x. 1903 (No. 1647).

1 juv., Nigri River, East Kimberley, 22. v. 1902 (No. R. 488).

"Iris light brown, feet dull yellow, bill black above, dull yellow below."

126. *Misocalius palliolatus* (Lath.).

Cuculus palliolatus Latham, *Ind. Orn. Suppl.* ii. p. xxx (1801: Australia).

♂ ad., Margaret River, Northern Territory, 14. viii. 1902 (No. R. 653).

♀ ad., Nigri River, East Kimberley, 22. v. 1902 (No. R. 487).

"Iris dark brown, feet and bill blackish."

♂, Alligator River, 30. ix. 1903 (No. 1604).

127. *Chrysococcyx basalis* (Horsf.).

Cuculus basalis Horsfield, *Trans. Linn. Soc. Lond.* xiii. p. 179 (1821: Australia).

♀, Nullagine Road, 13. iv. 1901 (No. R. 131).

♂ ad., Wynne, Derby, November 1901 (No. R. 295).

128. *Eudynamis orientalis cyanocephalus* (Lath.).

Cuculus cyanocephalus Latham, *Ind. Orn. Suppl.* ii. p. 30 (1801: Australia); cf. *Nor. Zool.* 1903, pp. 235-8.

1 ♂, Weeda Creek, W. Kimberley, 24. xi. 1901 (No. R. 278).

1 ♀, Derby, 15. iii. 1902 (No. 1645).

♂ ♀, South Alligator River, 25, 26. xi. 1902 (Nos. 754, 814).

7 ♂ ad., 4 ♀ ad., 1 ♂ juv., Eureka, January and February 1903 (Nos. 1006 to 1010, 1013 to 1015, 1057, 1058, 1122, 1123).

There is much variation in the colour of the adult *males*, these being sometimes more greenish, sometimes quite blue.

129. **Scythrops novaehollandiae** Lath.

Scythrops novaehollandiae Latham, *Ind. Orn.* i. p. 141 (1790).

♂ ad., Fitzroy River, Derby, 1. xii. 1901 (No. R. 365). Mr. Tunney says "Only found during rainy season."

130. **Centropus phasianus** (Lath.).

Centropus phasianus Latham, *Ind. Orn.* ii. *Suppl.* p. 30 (1801).

1 "♀," Nullagine River, 17. iv. 1901 (No. R. 102).

1 "♀," Shaw River, N.W. Australia, 27. viii. 1901 (No. R. 223).

1 "♂," 150 miles from Wyndham, 25. v. 1902 (No. R. 493).

1 "♀," McKinley River, Northern Territory, 26. ix. 1903 (No. 795).

4 "♀ ♀," 1 unsexed, South Alligator River, October 1902 (Nos. 796 to 800).

5 ♂ ♀ immat., Brock's Creek, Northern Territory, July and August 1902 (Nos. R. 576 to R. 580).

1 ♂ ad., 1 ♀ ad., 1 immat., Enreka, Northern Territory, February 1903 (Nos. 1124 to 1126). "Iris red, legs bluish."

131. **Pitta iris** Gould.

Pitta iris Gould, *P.Z.S.* 1842, p. 17 (Coburg Peninsula).

7 ♂ ad., 4 ♀ ♀, (South) Alligator River, 30. September, 5 to 28. October 1903 (Nos. 717 to 727).

"Iris and legs brown, bill black. Caught in the jungle; more plentiful in the jungles near the coast, scarcer up the river."

132. **Microeca flavigaster** Gould.

Microeca flavigaster Gould, *P.Z.S.* 1842, p. 132 (Port Essington).

2 ♂ ♂, South Alligator River, 15. x., 13. xi. 1902 (Nos. 741, 745).

♀, Alligator River, 29. ix. 1903 (No. 1584).

133. **Microeca fascians assimilis** Gould.

Microeca assimilis Gould, *P.Z.S.* 1840, p. 172 (Gulf of Carpentaria).

Microeca pallida De Vis, *Proc. Roy. Soc. Queensland*, i. p. 159 (1884: Norman River, Kimberley district).

I do not understand why North accepts the name *pallida* for this form, or why Campbell recognises both *assimilis* and *pallida*, both names evidently applying to the smaller and paler subspecies of *fascians*.

♀, Derby, 8. iii. 1902 (No. 1609). Tail and body-plumage in moult.

♀, Soda Springs, Kimberley, 24. iv. 1902 (No. R. 422). "Iris brown, bill and feet blackish." The base of the under mandible is pale. The tail and wings are beautiful, just being through the moult. - The upperside is in moult, some of the feathers still showing the white tips which we find in the young bird.

♀ ad., The Brook, 15 miles from Ord Station, 19. v. 1902 (No. R. 423).

♂ juv., Eureka, 9. i. 1903 (No. 1032). The feathers of the upperside have white triangular tips, those of the chest round dark brown patches at the tip.

♂ ♀, South Alligator River and 20 miles off South Alligator River, 30. iii. and 30. iv. 1903 (Nos. 1280, 1281).

134. *Melanodryas bicolor picata* Gould.

Melanodryas picata Gould, *Handb. B. Australia* i. p. 285 (N.W. Australia).

Mr. A. J. North, in his recent work "Nests and Eggs of Birds" of Australia, Part III. p. 171, comes to the conclusion that *M. bicolor* and *picata* should not be separated. This conclusion is erroneous. If we compare a series of north-western examples with a series of south-eastern specimens we find: 1. That the former are smaller, wings averaging 5 to 8 mm. shorter. 2. That generally the former have more white in the tail. I have not one specimen in which the black on the inner web of the outermost rectrix reaches as far as the base of the tail, while I have seen a number of *M. bicolor bicolor* that have this peculiarity. The amount of white in the tail varies considerably, but it is obvious that, as a rule, there is more in *picata*. 3. That the white on the underside is purer, more snowy. 4. That the *females* are a little lighter on the upperside. Intermediate examples occur in South-western Australia, and probably elsewhere, where the areas of the two forms meet, but specimens from the centres of distribution are easily distinguishable, and therefore we must separate the two forms as subspecies, trinomially. There is no other scientific proceeding. If we distinguish the various forms now existing in nature, we must distinguish all: it is purely arbitrary, and therefore not scientific, if we separate those which appear to us easily separable and "lump" those that are distinguished by "slight" differences only; or if we brush away the fact that two forms are different, because we find in the intermediate areas certain intermediate individuals.

Mr. Tunney sent the following specimens of *M. b. picata* :—

1 ♂ without label from Alligator River.

1 ♂ ad. 1 ♀ juv., Nullagine Road, 30. iv. 1901 (Nos. R. 110, 111).

1 ♂ ad., Soda Springs, Kimberley, 24. iv. 1902 (No. R. 416).

1 ♀ ad., 12 miles from Victoria Station, Northern Territory, 4. vii. 1902 (No. R. 650).

1 ♂, 1 ♀ juv., Eureka, Northern Territory, 24. i., 7. ii. 1903 (Nos. 990, 1114).

5 ♂♂, 1 ♀, South Alligator River, March, April, May 1903 (Nos. 1241 to 1246). "Iris, bill and feet black."

135. *Smicrornis flavescens* Gould.

Smicrornis flavescens Gould, *P.Z.S.* 1842. p. 134 (Port Essington).

♀, Crawford's Springs, Northern Territory, 4. vii. 1902 (No. R. 586). "Iris white, bill and feet brown."

♂ ♀, Eureka, 9, 13. i. 1903 (Nos. 1002, 1003). "Mostly found in hilly country."

136. *Gerygone culicivorus* (Gould).

Psilopus culicivorus Gould, *P.Z.S.* 1840. p. 176 ("Western Australia").

♀ ad., Derby, 2. iii. 1901 (No. 1611). "Shot in mangroves."

♀, Derby, 8. i. 1902 (No. R. 371). "Caught in mangroves near seashore."

Mr. Hall sent us two specimens from the Fitzroy River, Derby.

137. *Gerygone albigularis cinerascens* Sharpe.

Gerygone cinerascens Sharpe, *Journ. Linn. Soc. Lond.* xiii. p. 494 (S.E. New Guinea, probably Port Moresby).

Dr. Sharpe described *G. cinerascens* from a specimen collected by Mr. O. C. Stone in S.E. New Guinea, and afterwards (*Cat. B. Brit. Mus.* iv. p. 213, identified with it a very bad skin from the Victoria River, N.W. Australia.

Mr. Tunney sent a male from Brock's Creek, Northern Territory, shot 5. viii. 1902 (No. R. 643). "Iris reddish brown, bill and feet black." This specimen is probably immature, as the throat is not quite white, but mixed with yellow feathers. Mr. Robert Hall sent us a male and an unsexed specimen from Derby, obtained in August 1900, and we have also a male collected by Captain Bowyer Bower in N.W. Australia. These birds are all identical with Sharpe's *cinerascens*. They differ from *G. albigularis albigularis* in being considerably smaller (wing 57 to 58 against 62 to 64 in *albigularis*), and in the paler, less brownish upper surface. There is a very distinct greenish olive tinge on the upper surface in the freshly moulted, but in the worn plumage this disappears more or less, though even in the type it is traceable.

138. *Poecilodryas cerviniventris* (Gould).

Petroica ? cerviniventris Gould, *P.Z.S.* 1857. p. 221 (N.W. Australia).

♂, The Brook, 15 miles from Ord Station, W. Australia, 19. v. 1902 (No. R. 420).

♂, Negri River, E. Kimberley, 22. v. 1902 (No. R. 421).

♀, Carlton Reach, E. Kimberley, 18. vi. 1902 (No. R. 640).

♂ ♀, Margaret River, Northern Territory, 13, 14. viii. 1902 (Nos. R. 641, 642).

3 ♂♂, 2 ♀♀, Alligator River, September, October 1903 (Nos. 1619, 1620, 1623, 1624, 1625). "Iris dark brown, bill and feet black. Found in watercourses and in river-beds.

139. *Rhipidura tricolor motacilloides* Vig. & Horsf.

[*Muscicapa tricolor* Vieillot, *Nouv. Dict. d'Hist. Nat.* xxi. p. 490 ("Timor"—error. I have accepted Amboina as the original locality).]

Rhipidura motacilloides Vigors & Horsfield, *Trans. Linn. Soc. Lond.* xv. p. 248 (Australia).

I have examined a good series of Australian skins, and find that they all differ at a glance—one can even feel the difference in the dark, as for example on a foggy November day in London—in having **very** much smaller bills, and also a little smaller size generally. It is strange that this striking difference has not been more emphasised. On the other hand, I cannot find any constant differences to separate a supposed western smaller race in Australia (*picata*). I must therefore unite all Australian birds under the name *Rhipidura tricolor motacilloides*.

♀ ad., Flora Valley, E. Kimberley, W. Australia, 9. v. 1902 (No. R. 417). "Iris brown, bill and feet black."

♀ ad., Soda Springs, Kimberley, 24. iv. 1902 (No. R. 418).

♂, Eureka, Northern Territory, 3. ii. 1903 (No. 1118).

♀, South Alligator River, 1. iv. 1903 (No. 1249).

♂, 20 miles west of South Alligator River, 30. iv. 1903 (No. 1248).

♀, Alligator River, 9. ix. 1903 (No. 1595).

140. *Rhipidura preissi* Cab.

Rhipidura preissi Cabanis, *Mus. Hein.* i. p. 57 (W. Australia).

"♂," Derby, 4. iii. 1902 (No. 1594).

"♀," Derby, 20. xii. 1901 (No. R. 370).

I am much puzzled about these birds. They are similar to specimens received from Messrs. Robert Hall and Tom Carter from Western Australia as *R. preissi*, and differ from *Rh. albiscapa* in having no black but only a grey patch on the lower throat, thus also agreeing with the description of *R. preissi*. From the same district (Derby), however, we have also received specimens with the black throat-patch, which shows that *preissi* and *albiscapa* do not represent each other geographically. Or does *R. preissi* ever get a black throat-patch? If so, how do these specimens differ from *albiscapa*? I find *albiscapa* so far not mentioned as occurring in Western Australia.

141. *Rhipidura rufifrons dryas* Gould.

Rhipidura dryas Gould, *B. Australia* i. Introd. p. xxxix (Port Essington).

♂ ad. (wings moulting), South Alligator River, 9. vi. 1903 (No. 1287).

"♂," Margaret River, Northern Territory, 13. viii. 1902 (No. R. 662).

142. *Rhipidura setosa isura* Gould.

Rhipidura isura Gould, *P.Z.S.* 1840. p. 174 ("North-west coast of Australia").

(Cf. *Nov. Zool.* 1898, pp. 525, 526).

2 ♂♂, Brock's Creek, Northern Territory, August 1902 (Nos. R. 651, 655).

2 ♂♂, 1 ♀, South Alligator River, October and November 1902, 4. iv. 1903 (Nos. 751, 752, 1274).

143. *Myiagra rubecula concinna* Gould. (?)

Myiagra concinna Gould, *B. Austral.* ii. pl. 90 (N.W. Australia).

It seems that male specimens from N.W. Australia, as well as those from Cape York, have always a blackish loreal line, while this is not pronounced in those from Queensland, N. S. Wales, Victoria, nor in those from the Louisiades. But this form is not easily, and perhaps not always, distinguishable; moreover the females appear to be quite alike.

♂ ad., Cullen River, Northern Territory, 24. vii. 1902 (No. R. 647).

♂ ad., Brock's Creek, Northern Territory, 31. vii. 1902 (No. R. 648).

♀ ad., Margaret River, Northern Territory, 16. viii. 1902 (No. R. 656).

♂ ad., Mary River, Northern Territory, 14. ix. 1902 (No. 748).

2 ♂♂ ad., 1 ♀ ad., South Alligator River, October 1902, June and August 1903 (Nos. 749, 1250, 1565).

♂ ad., Alligator River, 60 miles from coast, 28. x. 1903 (No. 1602).

144. **Monarcha chalybeocephalus nitidus** (Gould).

Piezorhynchus nitidus Gould, *P.Z.S.* 1840. p. 171 ("North-west coast of Australia").

♀, Coolabing Station, Elvira River, E. Kimberley, 14. v. 1902 (No. R. 419).

♂, Burundie, Northern Territory, 28. vii. 1902 (No. R. 647).

"Bill dull blue, tip black."

1 ♂, 2 ♀♀, Margaret River, Northern Territory, 14. viii. 1902 (Nos. R. 638, 639, 646).

♂, East of Mary River, Northern Territory, 16. ix. 1902 (No. 747).

3 ♂♂, (South) Alligator River, 5. vii., 30. ix., 12. x. 1903 (Nos. 1615, 1616, 1251).

145. **Seisura nana** Gould.

Seisura nana Gould, *Ann. N. Hist.* (4) vi. p. 224 (N. Australia).

♂ ad., South Alligator River, 17. xi. 1902 (No. 750).

146. **Malurus dorsalis** (Lewin).

Sylvia dorsalis Lewin, *B. New Holland*, pl. 14.

3 ♀♀, Derby, March 1902 (Nos. 1585, 1591, 1612).

3 ♂ ad., 2 ♀ juv., Meda Station, Derby, January and February 1902 (Nos. 394 to 397, 399).

♂♀, Brock's Creek, 4, 6. viii. 1902 (Nos. R. 657, 660).

♂, Mt. Anderson, 31. x. 1901 (No. R. 281).

3 ♂♂, 4 ♀♀, Enreka, January, February 1903 (Nos. 984, 985, 986, 1101, 1102, 1103, 1104).

2 ♀♀, 20 miles west of South Alligator River, 30. iv., 1. v. 1903 (Nos. 1275, 1276).

147. **Malurus leucopterus** Quoy & Gaimard.

Malurus leucopterus Quoy & Gaimard, *Voy. autour du Monde Zool.* p. 108, pl. 23. fig. 2 (1824 : "sur l'île Dirk-Hatichs").

♂ ad., Poondand, N.W. Australia, 12. ix. 1901 (No. R. 216).

♂ ad., ♂ juv., Marble Bar, N.W. Australia (Nos. R. 146, 147).

"♂ juv.," Derby, 8. iii. 1902 (No. 1610).

"♂ juv.," East of South Alligator River, 5. viii. 1903 (No. wanting).

♀, Nullagine, 14. iv. 1901 (No. R. 148).

"♂ immat." Meda Station, Derby, 27. ii. 1902 (No. 398).

148. **Malurus pulcherrimus** Gould.

Malurus pulcherrimus Gould, *P.Z.S.* 1844. p. 106 ("Western Australia").

6 ♂♂, 4 ♀♀, shot in the granite ranges ten miles east of South Alligator River, July and August 1903 (Nos. 1282 to 1286, 1288, 1289, 1292, 1563, 1564).

I suppose these are all *M. pulcherrimus*, though I cannot call the throat and chest deep blue, but consider it, like Dr. Sharpe, to be black. The males

differ at a glance from their allies *M. elegans*, *lamberti* and *amabilis* by having a different blue on the back and sides of the head. They differ from those of *M. assimilis* in having the forehead, ear-coverts and feathers round the eye lighter and more greenish blue. The females, however, are much more distinct: they are above dull bluish grey or greyish blue, the tail is blue, bill brownish red, lores creamy white. I may mention that also the females of *M. amabilis* are widely different from those of *M. lamberti*, but we have still to expect a full explanation of all the *Maluri* up to date. I am not sufficiently acquainted with them to decide how many are species and how many subspecies.

149. *Graucalus melanops* (Lath.).

Corvus melanops Latham, *Ind. Orn. Suppl.* p. xxiv (1801: Australia).

2 ♂ ad., South Alligator River, 7, 30. iv. 1903 (Nos. 1321, 1322).

1 ♂ ad., 2 ♂ juv., 1 ♀, Nullagine, N.W. Australia, 15, 16, 30. iv. 1901 (Nos. R. 98, 99, 100, 101).

These specimens from near Nullagine are above much paler than the two from the South Alligator River, and than all other specimens from Australia I have seen being, in fact, whitish grey above. The one ♂ is apparently as fully adult as those from the South Alligator, and they are shot in the same month. Australian collectors must collect series and inform us, whether these light birds are individual aberrations or a different race?

150. *Graucalus papuensis hypoleucus* Gould.

Graucalus hypoleucus Gould, *P.Z.S.* 1848. p. 38 (Port Essington).

(Cf. *Nor. Zool.* 1903, p. 205.)

♂, Cockatoo Springs, E. Kimberley, 3. vi. 1902 (No. R. 413).

♀, Cullen River, Northern Territory, 24. vii. 1902 (No. R. 599).

2 ♂♂, Margaret River, Northern Territory, 13, 14. viii. 1902 (Nos. 598, 600).

2 ♂♂, 2 ♀♀, Brock's Creek, Northern Territory, August 1902 (Nos. 595, 596, 597, 601).

2 ♂♂, Eureka, Northern Territory, 12. i., 5. ii. 1903 (Nos. 1017, 1060).

3 ♂♂, 3 ♀♀, South Alligator River, October and November, 1902, April 1903 (Nos. 728, 729, 730, 1318, 1319, 1320).

151. *Lalage karu leucomela* (Vig. & Horsf.).

Campophaga leucomela, Vigers & Horsfield, *Trans. Linn. Soc.* xv. p. 215 (1826: Broad Sound, Queensland).

2 "♂♂," (South) Alligator River, 30. ix., 7. x. 1903 (Nos. 1597, 1618). These two specimens have bars on the chest and sides, leaving only the middle of the abdomen, which is buff, unbarred.

I have no doubt that the Australian form is different from *L. k. karu* and must be called *L. k. leucomela*. The bases of the ramp feathers are much purer white in *L. k. karu* and the allied races from the islands (cf. *Nor. Zool.* 1903, p. 210). The question is, whether the adult ♂ of *leucomela* is always unbarred below or not? If it has no bars, then the above-mentioned two specimens are

not fully adult, but they do not show this otherwise. Mr. North, in his work "*Nests and Eggs of Birds, etc.*" pt. 2, p. 116, does not describe the young and immature stages.

152. *Lalage tricolor* (Swains.).

Ceblepyris tricolor Swainson, *Zool. Journ.* i. p. 467 (1825).

♂ juv., Condon Road, 15. v. 1901 (No. R. 3).

2 ♂ juv., 2 ♀ juv., Brock's Creek, Northern Territory, August 1902 (Nos. R. 644, 645, 652, 654).

1 ♂ juv., 1 ♀ juv., South Alligator River, June 1903 (Nos. 1264, 1265).

153. *Pomatorhinus rubeculus* Gould.

Pomatorhinus rubeculus Gould, *P. Z. S.* 1839, p. 144 ("North-west coast of Australia").

1 ♀, Coongan River, N.W. Australia, 5. iv. 1901 (No. R. 119).

2 ♂♂, 3 ♀♀, Nullagine Road, April, May 1901 (Nos. R. 118, 120, 121, 122, 123).

1 ♂, Enreka, 20. ii. 1903 (No. 1074).

2 ♂♂, 1 ♀, 1 ♂ juv., South Alligator River, April and June 1903 (Nos. 1326, 1327, 1334, 1341).

154. *Cinclorhamphus cruralis* (Vig. & Horsf.).

Megalurus cruralis Vigors & Horsf., *Trans. Linn. Soc. London*, xv. p. 228 (1826 : Australia).

♂, Hall Creek Road, 28. iv. 1902 (No. R. 462). "Iris, feet and bill brown."

155. *Cinclorhamphus rufescens* (Vig. & Horsf.)

Anthus rufescens Vig. & Horsf. *Trans. Linn. Soc.* xv. p. 230 (1826 : Australia).

♀, Behn River, East Kimberley, 28. v. 1902 (No. R. 458).

♂, Nullagine Road, 3. v. 1901 (No. R. 109).

♂, Glencoe Station, Northern Territory, 6. ix. 1902 (No. 739).

♂, Argyle Station, East Kimberley, 31. v. 1902 (No. R. 461).

♀, Ord River, 150 miles from Windham, W. Australia, 23. v. 1902 (No. R. 460).

"Iris brown (light brown), feet fleshy brown (dull whitish brown), bill dark brown."

156. *Amytornis housei* (Milligan).

Amytis housei Milligan, *Rep. Kimberley Expl. Exp.*, App. B. (1902 : Kimberley).

16 specimens from 10 miles east of South Alligator River, July and August 1903 (Nos. 1303, 1305, 1306, 1307, 1549 to 1560). "Iris brown, legs brown."

Of these 15 birds 7 are marked as males, which have all lighter, more cinnamon-chestnut abdomina, 7 as females, which all have the abdomen darker, of a deep chestnut, while one with a light abdomen is marked "female" and one with a dark chestnut abdomen "male." I have therefore no hesitation in assuming that these last two birds are erroneously sexed, and that the male has a lighter, more cinnamon, the female a darker, chestnut abdomen.

"♀," but abdomen pale and therefore a male, shot in the granite ranges near the head of the South Alligator River, 20. v. 1903 (No. 1304). "Runs very fast and hides under rocks."

Although I have not been able to compare the type specimen, I believe this fine bird to be *A. houstoni*. The head, neck, and upper back are black, each feather with a shaft-line in the shape of a row of successive sagittate white markings, middle of back and rump chestnut with buff shaft-lines, upper tail-coverts blackish brown, with buff shaft lines and chestnut edges. Remiges brownish black with narrow dark brown outer edges, tail brownish black. Throat and foreneck white, sides of same black with broad white shaft-stripes. Abdomen in the male cinnamon-rufous, in the female deep chestnut, under tail-coverts blackish with buff shaft-stripes and buff or chestnut edges. Wing (sexes equally large) 74 to 77, tail about 106 to 114, bill 13.5 to 15.5, and arms 28 to 30 mm.

157. *Amytornis striatus* Gould (?).

Dasyornis striatus Gould, *P.Z.S.* 1839. p. 143 ("Liverpool Plains, N. S. Wales").

A badly damaged "♀" obtained at Marble Bar, 5. v. 1901, closely resembles specimens called *A. striatus* and collected near Point Cloates, W. Australia, by Mr. Tom Carter; but the bill is very much larger, measuring 15 mm. ! The dimensions also are generally a little larger, but not much. It would be interesting to know if such differences in size exist in this species, or whether there are different races?

158. *Eremiornis carteri* North.

Eremiornis carteri North, *Victorian Naturalist* xvii. p. 78 (1900 : N.W. Cape, N.W. Australia).

The young is above more olive and uniform, lacking the rufous forehead and rufous tinge on the lower back and rump.

3 ♂♂, Marble Bar, April and May 1901 (Nos. R. 112, 114, 116).

1 ♀, Condon Road, 10. v. 1901 (No. R. 5).

3 ♂♂, 1 ♀, Nullagine, N.W. Australia, April 1901 (Nos. R. 113, 115, 117, 161).

2 ♂♀, Fitzroy River (200 miles up), April 1902 (Nos. R. 428, 432).

1 ♀, Negri River, W. Australia, 23. v. 1902 (No. R. 429).

1 ♀, Hardman Range, E. Kimberley, 17. v. 1902 (No. R. 430).

2 ♂♀, Mt. Huxley, Hall's Creek Road, 16. iv. 1902 (Nos. R. 431, 433). "Iris brown (dark brown), feet leaden grey (dark brown), bill, upper mandible black, under grey." "Found in the spinifex country from Onslow to East Kimberley and from Ashburton River to Hall's Creek Road."

These specimens agree perfectly with 4 from Point Cloates and Derby, collected by Mr. Tom Carter.

159. *Megalurus galactotes* (Temm.).

Megalurus galactotes Temminck, *Pl. Col.* 65, fig. 1 (1823 : Australia—which part unknown).

3 ♀, South Alligator River, 15. x. 1902 (Nos. 742, 743).

6 ♂♂, Eureka, January and February 1903 (Nos. 998 to 1001, 1120, 1121).

"Found in long grass on most of the watercourses."

160. **Cisticola exilis** (Vig. & Horsf.).

Mulurus exilis Vigors & Horsf., *Trans. Linn. Soc.* xv. p. 223 (1827—ex Latham : Australia).

♂, Ord River Station, E. Kimberley, 21. v. 1902 (No. R. 415).

♀, Derby, 19. xii. 1901 (No. R. 372).

♀, South Alligator River, 15. xi. 1902 (No. 744).

3 ♂♂, Eureka, January 1903 (Nos. 987, 988, 989).

161. **Ephthianura tricolor** Gould.

Ephthianura tricolor Gould, *P.Z.S.* 1840. p. 159 ("Hab. ?")

♂ immat., Soda Spring, Kimberley, 24. iv. 1902 (No. R. 437) "Iris white, bill and feet brown."

162. **Ephthianura crocea** Cast. & Rams.

Ephthianura crocea Casteln. & Ramsay, *Proc. Linn. Soc. N. S. Wales* i. p. 380 (1877—Norman River, Gulf of Carpentaria).

5 ♂♂, 2 ♀♀, Alligator River, September 1903 (Nos. 1637 to 1643). "Iris white, legs brown." "Caught on the open flats and plains near mangrove swamps."

163. **Grallina picata** (Lath.).

Gracula picata Latham, *Ind. Orn. Suppl.* p. xxix (1801—Australia).

♂, Nullagine, N.W. Australia, 20. iv. 1901 (No. R. 96).

♀ juv., Taylor's Creek, Nullagine, 15. iv. 1901 (No. R. 97).

♂, Hall's Creek Road, 27. iv. 1902 (No. R. 425).

1 ♂, 3 ♀♀, Eureka, Northern Territory, January and February 1903 (Nos. R. 980, 981, 1080, 1081).

3 ♀♀, Alligator River, June and September 1903 (Nos. 1263, 1648, 1649).

♀, Mary River, Northern Territory, 3. x. 1902 (No. 746).

164. **Colluricincla brunnea** Gould.

Colluricincla brunnea Gould, *P.Z.S.* 1840. p. 164 (N.W. Australia).

♂, George's Creek, Northern Territory, 8. vii. 1902 (No. R. 626).

♂, Cullen River, Northern Territory, 24. vii. 1902 (No. R. 627).

♀, Mary River, Northern Territory, 6. x. 1902 (No. 727).

♂♀, Eureka, Northern Territory, 9. i., 7. ii. 1903 (Nos. 1071, 1076).

2 ♂♂, 2 ♀♀, South Alligator River, April, May, June 1903 (Nos. 1313, 1314, 1315, 1317).

Dr. Sharpe's *pallidirostris* was doubtless described in error, as he did not know the sexes of *C. brunnea*, the male of which has a black bill, the female a whitish one.*

* In *Nor. Zool.* 1903, p. 99, Dr. Rothschild and I united the specimens from New Guinea with *brunnea*. From Mr. North's notes it appears that *C. superciliosa* is the same as the Papuan form, which is spread over parts of New Guinea and the Cape York Peninsula. Unfortunately we have no material from Cape York for comparison, but the Papuan birds differ from our *brunnea* from N.W. Australia in having a longer and less high bill.

I may here add, that "*Colluricincla sibila*" and "*Pinarolestes boucri*," in Sharpe's *Hand-list*, iv. pp. 269, 270, are the same, and that in my opinion this species is a *Pinarolestes* and not a *Colluricincla*. The generic name was originally spelt *Colluricincla*, and Dr. Sharpe's recent spelling is an error.

165. *Colluricincla woodwardi* spec. nov.

Colluricincla supra cinerascens-brunnea, pileo capitisque lateribus griseo-centioribus. Remigibus fuscis, pogoniis internis basin versus cinnamomeo marginatis. Cauda fusca. Guttura pectoreque summo pallide-griseis, paullo cervineo tinctis, scapis plumarum nigricantibus. Abdomine ochraceo-luteo, parte superiore griseo tincto, subcaudalibus subalaribusque ochraceo-luteis. Rostro pedibusque nigricantibus.

This fine new Shrike-Thrush is above greyish brown, more greyish on the crown and sides of the head. The quills are dark brown, the outer ones darkest, the latter very narrowly, the inner secondaries more widely edged with the colour of the back, inner webs edged with cinnamon, except towards the tip. Tail dark brown. Throat and chest pale grey with a faint buff tinge, the shafts of the feathers blackish. Abdomen ochraceous buff, slightly washed with grey, vent, under tail- and under wing-coverts ochraceous buff. Bill and feet blackish, iris brown. ♂ ad., wing 130 to 133, tail about 125, culmen about 26 to 28, metatarsus about 30 mm.

Type: ♂ ad., 10 miles east of South Alligator River, 15. viii. 1903 (No. 1545).

Hab.: Granite hills near South Alligator River.

Mr. Tunney sent the following specimens:

2 ♀ ad., granite hills 10 miles east of South Alligator River, 13, 15. viii. 1903.

1 ♀ ad., hills near South Alligator River, 11. viii. 1903 (Nos. 1544, 1545, 1546).

Named in honour of Dr. Bernard Woodward, Curator of the Perth Museum, who arranged Mr. Tunney's expeditions.

166. *Colluricincla parvula* Gould.

Colluricincla parvula Gould, *P.Z.S.* 1845 (Port Essington).

5 ♂♂, 3 ♀♀, Alligator River, October 1902, July, September, October 1903 (Nos. 726, 1290, 1291, 1575, 1576, 1578, 1599, 1603).

I cannot see the reason why this species and *C. rufigaster* are separated generically and placed with *Pinarolestes*. *C. parvula* stands between the group of large species (*harmonica*, *brunnea*, etc.) and the small ones (*rufigaster*, *parvissima*, etc.). The eggs of the former and latter groups are quite alike, except in size.

167. *Cracticus quoyi tunneyi* subsp. nov.

The black *Cracticus* from the Alligator River are clearly distinct from both *C. quoyi quoyi* and *C. quoyi rufescens*. Their bills are long and slender, as thin as those of *C. q. rufescens*, but much thinner and longer than those of *C. quoyi quoyi*. The wing is also much longer than in either of the two other known forms. There appear to be four forms of black *Cracticus* :—

1. *Cracticus quoyi quoyi* (Less.). Typical locality: Dorey in Dutch New

Guinea. Differs from all the other forms by its much thicker and more swollen bills. Young apparently always black! *Hab.*: New Guinea, Salwatti, Waigin, Mysol.

2. *Cracticus quoyi rufescens* De Vis, *Proc. Linn. Soc. N. S. Wales* vii. p. 562. Typical locality: Queensland. Differs at a glance from *C. q. quoyi* by its thinner, less swollen bill. Young evidently dimorphic: sometimes black, more often brown above with rusty buff stripes, underside rusty buff. Females (? when fully adult) also sometimes brown, but generally black. That the brown birds moult into the black ones is shown by two specimens in the Tring collection. (Cf. W. Rothschild, *Bull. B. O. C.* x. p. xl. 1900, and Campbell, *Nests and Eggs Austr. B.* p. 307. *Hab.*: Queensland.

3. *Cracticus quoyi* subsp. nov.? It is surprising to find that the Aru birds do not at all agree with the New Guinea form, but are very closely allied to *C. q. tunneyi*. Their bills seem, however, to be slightly shorter, and the wings shorter. As we have only two unsexed birds from Capt. Webster, apparently ♂ and ♀, and a female collected by Mr. Heinrich Kühn, I am not naming this form, which is intermediate between *C. q. quoyi* and *C. quoyi tunneyi*, but hope to discuss it later, when more skins from the Aru Islands are available.

4. *Cracticus quoyi tunneyi* subsp. nov. *Type*: ♂ ad., Alligator River, 25. ix. 1903 (No. 1603 Tunney coll.). Named in honour of the collector, Mr. J. T. Tunney. Differs from *C. q. rufescens* in its much larger size: bill ♂ 65.5, ♀ 53 to 55; wing, ♂ 205, ♀ 185 to 188 mm.—i.e. fully an inch longer than in *C. q. rufescens*. I am unable to say whether the young are black, rufous, or black and rufous.

Mr. Tunney sent the following specimens only:

♂ ad., Alligator River, Northern Territory, 25. ix. 1903 (No. 1603).

2 ♀ ♀, Alligator River, about 16 and 35 miles from the coast, 25. ix. and 10. x. 1903 (Nos. 1601, 1602).

Mr. Tunney says he shot these birds in mangrove swamps on tidal waters near the coast, where he only saw this *Cracticus*. "Iris dark brown, feet black."

168. *Cracticus nigrogularis nigrogularis* (Gould).

Fanga nigrogularis Gould, *P.Z.S.* 1836. p. 143 ("In Novâ Cambriâ Australi").

♀, Nullagine, N.W. Australia, 17. iv. 1901 (No. R. 94).

♀, Coongan River, N.W. Australia, 5. iv. 1901 (No. R. 95).

These specimens belong to the larger form, *C. n. nigrogularis*, the distribution of which is peculiar, as it seems to occur in New South Wales and throughout West Australia, and is only replaced by the smaller *C. n. picatus* in the Northern Territory and in the northern portions of Queensland. Birds collected by Mr. Tom Carter at Point Cloates are distinctly of the large form, while I consider all the North Queensland examples, from Cedar Bay, Cooktown, etc., to be typical *picatus*.

169. *Cracticus nigrogularis picatus* Gould.

Cracticus picatus Gould, *P.Z.S.* 1848. p. 40 ("Northern Australia").

5 ♂ ♂, 3 ♀ ♀, Brock's Creek, Northern Territory, end of July and August 1902 (Nos. 587 to 594).

♂, South Alligator River, 15. viii. 1903 (No. 1541).

♂, Eureka, Northern Territory, 15. ii. 1903 (No. 1059).

♀ juv., Nellie Creek, Northern Territory, 15. ii. 1903 (No. 1075).

170. **Cracticus argenteus** Gould.

Cracticus argenteus Gould, *P.Z.S.* 1840. p. 126 (N.W. Australia).

♂ ♀ ad., Granite hills, 10 miles east of South Alligator River, 12, 13. viii. 1903 (Nos. 1542, 1543).

♀ jun., Red sandstone hills near South Alligator River, 11. v. 1903 (Nos. 1316).

171. **Gymnorhina tibicen longirostris** subsp. nov.

Differs from *G. tibicen tibicen* in its larger size and especially in its much longer bill. ♂ ad.: wing, 251 to 257; bill, 72.5 to 73.5 mm. *Type*: ♂ ad., Nullagine, N.W. Australia, 16. iv. 1901 (No. R. 92).

G. tibicen tibicen was originally described from New South Wales, and the birds from there have the bill about a centimetre shorter.

Mr. Tunney sent only:

2 ♂ ad., Nullagine, N.W. Australia, 16. iv. 1901 (Nos. R. 92 and 93).

172. **Pachycephala lanoides** Gould.

Pachycephala lanoides Gould, *P.Z.S.* 1839. p. 142 (N.W. coast of Australia).

2 ♂ ad., 4 ♀ ♀, Derby, in mangroves near the sea-shore, 20. xii. 1901 and March 1902 (Nos. 366, 1579, 1586, 1587, 1605, 1607). "Iris reddish-brown in both sexes, feet leaden grey, bill black."

173. **Pachycephala rufiventris falcata** Gould.

Pachycephala falcata Gould, *P.Z.S.* 1842. p. 134 (Port Essington).

P. ruf. falcata evidently represents *P. ruf. rufiventris* in N.W. Australia, but the North Queensland birds before me are not *P. r. falcata*!

1 ♂ juv., 1 ♀, Derby (Nobby Wall), 7. xii. 1901 (Nos. R. 282, 283).

3 ♀ juv., Eureka, February 1903 (Nos. 1115, 1116, 1117).

♂, Fish-hole, Elvira River, West Australia, 12. v. 1902 (No. R. 466).

3 ♂ ♂, 1 ♀, South Alligator River, March and April 1903, October 1902 and 1903 (Nos. 731, 1273, 1479, 1621). "♂ ad.: Iris hazel-brown (red), feet black, bill black."

174. **Poecilodryas pulverulentus** (Bp.).

Myiolestes pulverulentus Bp., *Consp. Ar.* i. p. 358 (1850: ex S. Müll. MS., New Guinea).

Unfortunately we have no specimens from New Guinea, which are said to be indistinguishable from Australian ones. If they should be separable, the Australian form would have to be called *Poecilodryas pulverulentus leucura* Gould.

In my opinion both *Poecilodryas* and *Eopsaltria* are genera of the *Muscivapidae* and not of the *Laniidae*; but a careful revision of these and allied genera, with the help of all known species, is desirable.

2 ♂♂, 2 ♀♀, Alligator River, September 1903 (Nos. 1580, 1588, 1596, 1622).

We also received a pair from Cape York, collected by Mr. R. Jardine, which are in every way similar to those from the Alligator River.

175. *Poecilodryas cinereiceps* spec. nov.

Speciei *Poecilodryas pulverulentus* dictae haud dissimilis, sed minor, notaeo cinerascens, unicolore, capite minime nigrescente.

This new species differs at a glance from *P. pulverulentus*; the upper surface is much paler, not so bluish-grey, but lighter and more ashy, and the crown is not in the least blackish, but of the same ashy-grey colour as the back. The lores only are blackish. Underside as in *P. pulverulentus*, also the tail black, with a wide band in the basal half (except on the two central rectrices) white, upper tail-coverts black, under tail-coverts white. Bill (♂) about 14.5 mm.: wing, ♂ 83 to 84, ♀ 78 mm. (In *P. pulverulentus* the ♂ has the wing about 87 to 91 mm., the ♀ 81 to 82.5 mm. long.) Type: ♂ ad., obtained on island near Hampton Harbour, 13. vii. 1901. No. 193, Tunney coll.

Mr. Tunney sent only three examples:—

2 ♂ ad. from island near Hampton Harbour, 13. vii. 1901 (Nos. R. 192, 193).

1 "♂" (but probably a ♀), apparently less adult, Derby, 9. i. 1902 (No. R. 373).

This, as well as the two from the island, were obtained among the mangroves.

Besides these, we have in the collection 2 ♂ ad. and 1 ♀ ad., collected near Derby in March 1901, and sent to us by Mr. Robert Hall; and 1 ♀ from the N.W. Cape, 23. ii. 1902, collected by Mr. Tom Carter.

Mr. Carter describes the iris as reddish hazel, the bill as black, legs and feet as purplish horn-colour. Mr. Tunney calls the iris brown, the "legs black."

This is a very interesting addition to the Australian ornithology, evidently hitherto overlooked.

176. *Sphenostoma cristatum* Gould.

Sphenostoma cristatum Gould, *P.Z.S.* 1837. p. 150 ("In Nova Cambria Australi, apud oram orientalem").

♂ ♀, Nullagine, N.W. Australia, 19. iv. 1901 (Nos. R. 105, 106).

177. *Neositta leucoptera* (Gould).

Sittella leucoptera Gould, *P.Z.S.* 1839. p. 144 ("North-west coast of Australia").

2 ♀♀, Meda Station, Kimberley, 8. ii. 1902 (Nos. 385, 386).

♂ ♀, Derby, 6, 7. iii. 1902 (Nos. 1608, 1609).

♀, Eureka, Northern Territory, 2. ii. 1903 (No. 1100).

2 ♂♂, South Alligator River, end of March and April 1903 (Nos. 1277, 1278).

The ♀ from Eureka has the black extended over the chin; in the ♂ (No. 1277) from the South Alligator River, the black reaches over the forehead to the base of the bill.

178. *Climacteris melanura* Gould.

Climacteris melanura Gould, *P.Z.S.* 1842. p. 138 ("North-west coast of Australia").

♂ ♀ ad. Liveringa, Derby, 17. xi. 1901 (Nos. R. 285, 286).

♀, South Alligator River, 9. iv. 1903 (No. 1279).

♀, Eureka, 21. ii. 1903 (No. 1119).

179. *Philemon argenticeps* (Gould).

Tropidorhynchus argenticeps Gould, *P.Z.S.* 1839. p. 144 ("North-west coast of Australia").

♂, Victoria River, Northern Territory, 30. vi. 1902 (No. R. 620).

♂, Pine Creek, Northern Territory, 25. vii. 1902 (No. R. 618).

3 ♂♂, 3 ♀♀, Brock's Creek, Northern Territory, July and August 1902 (Nos. R. 613 to 616, 619).

♂, Eureka, Northern Territory, 7. ii. 1903 (No. 1076).

2 ♂♂, 2 ♀♀, South Alligator River, October and November 1902 (Nos. 782, 785, 788, 789).

180. *Philemon citreogularis sordidus* (Gould).

Tropidorhynchus sordidus Gould, *B. Austr.* i. Introd. p. 58 (Coburg Peninsula).

1 ♂, 2 ♀♀, Meda Station, Kimberley, February 1902 (Nos. 379, 380, 381).

♀, Derby, 5. iii. 1902 (No. 1600).

2 ♂♂, Glencoe Station, Northern Territory, 6. ix. 1902 (Nos. 783, 790).

1 ♂, 2 ♀♀, Brock's Creek, Northern Territory, August 1902 (Nos. 621, 622, 623).

1 ♂, 3 ♀♀, South Alligator River, November 1902, March and April 1903 (Nos. 784, 786, 1335, 1336).

2 ♂♂, 1 ♀, Eureka, Northern Territory, January and February 1903 (Nos. 1004, 1067, 1068).

The typical *citreogularis* is evidently **not** found in North-western Australia, but the two subspecies are so closely allied that they are not to be named, except if a series of both is compared.

181. *Entomyza cyanotis albigennis* Gould.

Entomyza albigennis Gould, *P.Z.S.* 1840. p. 169 (Port Essington).

It is very interesting to see that the very young birds have the base of the primaries buff, a little paler than in *E. c. cyanotis*. There are thus three subspecies of *E. cyanotis* :—

E. cyanotis cyanotis Lath. : base of primaries buff, larger : New South Wales, Victoria, South Australia and Southern Queensland.

E. cyanotis harterti Rob. & Lav. (*Ibis* 1900. p. 635) : base of primaries paler buff, smaller : Northern Queensland.

E. cyanotis albigennis Gould : base of primaries white : N.-Western Australia.

Mr. Tunney sent :

5 ♂♂, 2 ♀♀, 1 ♂ juv., Cockatoo Springs, E. Kimberley, June 1902 (Nos. 444 to 449, R. 610, 611).

1 ♂, Burundie, Northern Territory, 28. vii. 1902 (No. R. 606).

1 ♂, 3 ♀♀, Brock's Creek, Northern Territory, end of July and August 1902 (Nos. R. 605, 607, 608, 609).

"Iris straw-colour (yellow, dull yellow), feet brown (dirty brown, blackish), bill black, bluish at base (in young birds yellowish at base), bare space above the eye pale blue, below the eye bright blue (in young birds bare space just round the eye blue, rest greenish yellow)."

182. *Myzantha flavigula lutea* Gould.

Myzantha lutea Gould, *P.Z.S.* 1839. p. 144 ("N.W. coast of Australia").

1 ♀, Nullagine Road, 14, 15. iv. 1901 (Nos. R. 107, 108).

1 ♂, 1 ♀, Nellie Creek, Northern Territory, 11. ii. 1903 (Nos. 1069, 1070).

3 ♂♂, 1 ♀, near the head waters of South Alligator River, May 1903 (Nos. 1322 to 1325).

183. *Ptilotis unicolor* Gould.

Ptilotis unicolor Gould, *P.Z.S.* 1842. p. 136 (Port Essington).

1 ♂, Elvira River, W. Australia, 12. v. 1902 (No. R. 443).

1 ♂, 2 ♀♀, Brock's Creek, Northern Territory, August 1902 (Nos. 628, 629, 630).

1 ♂, Eureka, Northern Territory, 2. ii. 1903 (No. 1077).

1 ♀, Alligator River, 7. ix. 1903 (No. 1577).

1 ♂, 2 ♀♀, South Alligator River, April and June 1903 (Nos. 1337, 1338, 1339).

184. *Ptilotis sonorus* Gould.

Ptilotis sonorus Gould, *P.Z.S.* 1840. p. 160 ("South and Western Australia").

♀, Marble Bar, 3. iv. 1901 (No. R. 145).

2 ♀♀, Lewis Islands, N.W. Australia, 27. vi. 1901 (Nos. R. 176, 177).

1 ♀, Soda Springs, Kimberley, 23. iv. 1902 (No. R. 442).

1 ♂, east of Mary River, Northern Territory, 16. ix. 1902 (No. 732).

185. *Ptilotis keartlandi* North.

Ptilotis keartlandi North, *Report Horn Scient. Exp.* p. 94, pl. 6 (1896).

1 ♂, Marble Bar, 5. v. 1901 (No. R. 141).

1 ♂, Carbarra Pool, Nullagine Road, 3. v. 1901 (No. R. 139).

1 ♂, 3 ♀♀, Taylor's Creek, Nullagine, N.W. Australia, April 1901 (Nos. R. 137, 138, R. 140, 144).

The ♀ R. 144 is very young. The upper surface is sandy or brownish buff, the crown like the back, ear-coverts pale grey, under-surface uniform yellowish buff.

186. **Ptilotis flavescens** Gould.

Ptilotis flavescens Gould, *P.Z.S.* 1839. p. 144 ("North-west coast of Australia").

- 1 ♂, Derby, 31. xii. 1901 (No. R. 369).
- 1 ♂, Fitzroy River, Derby, 3. xii. 1901 (No. R. 287).
- 1 ♀, Behn River, 29. v. 1902 (No. R. 436).
- 1 ♂, George's Creek, Northern Territory, 8. vii. 1902 (No. R. 661).
- 2 ♂♂, Margaret River, 20. iv. 1902 (Nos. R. 434, 435).

187. **Ptilotis leilavalensis** North.

Ptilotis leilavalensis North, *Rec. Austr. Mus.* iii p. 106 (1899: Fullarton River, near Leilavale Station, Queensland).

Ptilotis carteri Campbell, *Victorian Naturalist*, 1899 (N.W. Cape, Carter coll.)

- 1 ♂, Marble Bar, 4. iv. 1901 (No. R. 143).
- 3 ♂♂, Nullagine Road, April 1901 (Nos. R. 132, 133, 136).

188. **Glyciphila fasciata** Gould.

Glyciphila fasciata Gould, *P.Z.S.* 1842. p. 137 (Port Essington).

2 ♂♂, 2 ♀♀, Alligator River, 60 miles from the coast, October 1903 (Nos. 1571 to 1574).

"Caught on river bank in paper-bark trees. Iris dull red (reddish), legs light brown."

189. **Stigmatops ocularis** (Gould).

Glyciphila ? ocularis Gould, *P.Z.S.* 1837. p. 154 (Van Diemen's Land - ? errore!).

- 2 ♂♂, Taylor's Creek, Nullagine, 15. iv. 1901 (Nos. R. 142, 143).
- 2 ♂♀ juv., Lewis Island, N.W. Australia, 25. vi. 1901 (Nos. R. 197, 198).
- 1 ♀, Crawford's Spring, Northern Territory, 4. vii. 1902 (No. R. 664).
- 1 ♀, Meda Station, Derby, 1. ii. 1902 (No. R. 387).
- 2 ♂♀, Soda Springs, Hall's Creek Road, 23, 24. iv. 1902 (Nos. R. 438, 439).
- 5 ♂♂, Alligator River, March, September, October 1903 (Nos. 733, 734, 1333, 1590, 1635).

I am perfectly convinced that "*subocularis*," about which Gould himself was always uncertain, is based on young *ocularis*, while on the other hand the birds from the Lesser Sunda Islands have apparently stronger bills and might be separated as a new subspecies.

190. **Entomophila albigularis** Gould.

Entomophila albigularis Gould, *P.Z.S.* 1842. p. 137 (Type from Mayday Island in Van Diemen's Gulf, N.W. Australia).

- ♂♀, Alligator River, 8, 22. ix. 1903 (Nos. 1581, 1592).

191. **Entomophila rufogularis** Gould.

Entomophila rufogularis Gould, *P.Z.S.* 1842. p. 137.

- 3 ♂♂, Derby, 24. xi. 1901, 7. iii. 1902 (Nos. R. 292, 293, 1583).
1 ♂ juv., Brock's Creek, 7. viii. 1902 (No. R. 659).
2 ♀♀, South Alligator River (100 miles from the coast), 4. x. 1902, 7. iv. 1903 (Nos. 738, 1332).

192. **Melithreptus lunulata albogularis** Gould.

Melithreptus albogularis Gould, *P.Z.S.* 1847. p. 220 ("Northern and Eastern Australia").

- 1 ♂, Fitzroy River, Derby, 3. xii. 1901 (No. 294).
1 ♂, 2 ♀♀, Brock's Creek, Northern Territory, August 1902 (Nos. R. 631, 658, 663).
6 ♂♂, 1 ♀, Alligator River, October 1902, March, April, May, September 1903 (Nos. 737, 1328, 1329, 1330, 1331, 1593, 1617).
3 ♂♂, 1 ♀, Eureka, January, February 1903 (Nos. 996, 997, 1078, 1079).

193. **Myzomela obscura grisescens** subsp. nov.

[*Myzomela obscura* Gould, *P.Z.S.* 1842. p. 136 (Port Essington).]

Subspecies *Myzomela obscura obscura* dictae similis, sed omnino grisescensior.

This new form differs at a glance from *M. o. obscura* by its greyish, instead of dark brownish upper- and under-surface. This is most evident on the throat and breast. I have compared a fine series from Cape York, Bowen, Cooktown and other parts of Queensland, as well as from Port Essington.

Type: ♂ ad., Brock's Creek, 9. viii. 1902 (No. 635, Tunney coll.).

Mr. Tunney sent the following specimens in addition to the type specimen:

- 3 ♂♂, 1 ♀, Brock's Creek, Northern Territory, August 1902 (Nos. R. 633, 634, 636, 637).
1 ♂, east of Mary River, Northern Territory, 16. ix. 1902 (No. 736).
1 ♂, South Alligator River, 17. x. 1902 (No. 735).
"Iris brown, bill black, feet dull blue (bluish black)."

194. **Myzomela pectoralis** Gould

Myzomela pectoralis Gould, *P.Z.S.* 1840. p. 170 (N.W. coast of Australia).

- 2 ♂♂, 1 ♀ juv., Derby, December 1901 (Nos. R. 289, 367, 368).
1 ♂, 2 ♀♀, Mount Wynne, Derby, November 1901 (Nos. R. 288, 290, 291).
2 ♂♂, 2 ♀♀, Meda Station, Derby, February 1902 (Nos. R. 388 to 391).
1 ♂, Brock's Creek, Northern Territory, 6. viii. 1902 (No. R. 632).
2 ♂♂, Alligator River, 80 miles from the coast, April and October 1903 (Nos. 1293, 1582).

195. **Myzomela nigra** Gould.

Myzomela nigra Gould, *B. of Australia* iv. pl. 66 (Western Australia and Namoi).

- 1 ♂, from 240-mile post, Hall's Creek Road, 22. iv. 1902 (No. R. 440).
- 1 ♂ juv., Soda Spring, 23. iv. 1902 (No. R. 441).

196. **Dicaeum hirundinacea** (Shaw).

Motacilla hirundinacea Shaw, in Shaw & Nodder's *Nat. Misc.* iv. pl. 114 (1792).

- 1 ♂, Nullagine River, 17. iv. 1901 (No. R. 130).
- 1 ♂, Ord River, 21. v. 1902 (No. R. 424).

197. **Pardalotus melanocephalus uropygialis** Gould.

Pardalotus uropygialis Gould, *P.Z.S.* 1839. p. 143 (N.W. coast of Australia).

- 1 ♂, Brock's Creek, 19. viii. 1902 (No. R. 585).
- 3 ♂♂, South Alligator River, April, June, August 1903 (Nos. 1294, 1295, 1562).

198. **Anthus australis** Vig. & Horsf.

Anthus Australis Vig. & Horsf., *Trans. Linn. Soc. Lond.*, xv. p. 229 (Australia).

- 1 ♂, 1 ♀ ad., Lewis Islands, N.W. Australia, June, July 1901 (No. R. 195, 196).
- 1 ♂ juv., Eureka, Northern Territory, 25. ii. 1903 (No. 1113). In moult.
- 1 ♀ juv., Alligator River, 26. ix. 1903 (No. 1569).

These specimens (*i.e.* the adult ones) are rather pale and sandy.

199. **Mirafrja javanica horsfieldi** Gould.

- 1 ♂, 2 ♀♀, Glencoe, Northern Territory, September 1903 (Nos. 792, 793, 794).
- 5 ♂♂, 1 ♀, Eureka, Northern Territory, January, February 1903 (Nos. 992 to 925, 1005, 1112).
- 3 ♀♀, South Alligator River, November 1902, September 1903 (Nos. 809, 1567, 1570).

200. **Mirafrja javanica secunda** Sharpe.

- 2 ♂♀, Tappa Tappa, N.W. Australia, September 1901 (Nos. R. 220, 222).
 - 2 ♂♀, Box Soak, N.W. Australia, August 1901 (Nos. R. 217, 221).
 - 4 ♂♂, 2 ♀♀, Liveringa (Kimberley), N.W. Australia (Nos. R. 300 to 305).
 - 2 ♂♀, Meda Station, 28. i. 1902 (Nos. R. 383, 384).
 - 1 ♀, Flora Valley, East Kimberley, 8. v. 1902 (No. R. 459). An aberration of a pale cream-colour above and creamy white below.
- “Iris dark brown, feet and bill fleshy brown.” Not an “albino,” as the iris is not pink.

THE FORMS OF *MIRAFRA JAVANICA*.

A most interesting—because of its various subspecies—species of *Mirafra* is spread over the Eastern Archipelago, from Java to the Philippines and Australia. I am acquainted with the following forms :

1. *Mirafra javanica javanica* Horst. 1820. *Hab.* : Java, Bali.
2. *Mirafra javanica parva* Swinh. 1871. *Hab.* : Flores, Sumbawa, Lombok, Savu, Sumba.
3. *Mirafra javanica philippinensis* Wardl. Rams. 1886. *Hab.* : Philippines. Apparently only Luzon.
4. *Mirafra javanica horsfieldi* Gould 1847. *Hab.* : Probably only northern and eastern portions of Anstralia. We have specimens from the following localities : Moreton Bay, Eureka, Glencoe, South Alligator River. The upper surface of this form is very deep brown, the feathers of the back and scapulars almost black with pale rufous edges.
5. *Mirafra javanica pallida* Hall, "Emu" 1904. Differs at a glance from the true *M. j. horsfieldi* by its greyish upper surface. The edges to the feathers are not dark brown or rufous, but ashy grey, the rump and upper tail-coverts greyish, the under surface cream instead of rufous-buff, the edges to the quills paler. We have two examples from Mr. Hall, one without indication of locality (25. x. 1902), the other said to be from "N.W. Australia," from Rogers, taken 13. xii. 1902. "Iris brown ; bill : upper and tip of lower brown, base of lower yellowish white ; corner of mouth pale yellow ; feet and legs very pale brown." These two specimens are alike. One bears the name '*pallida*' in Mr. Hall's handwriting, and may have served for the original description just published. It will be the duty of our Australian brother-ornithologists to find out the exact distribution of this new subspecies, and to tell us on what soil and in what sort of country it lives.

We have also a male from Swan Hill, Victoria, 8. iv. 1899, also from Mr. Robert Hall, which is paler and greyer than typical *horsfieldi*, very near to *griseescens*, but not quite like it. Is this merely an exceptionally pale and grey *horsfieldi*, or another new race ?

6. *Mirafra javanica secunda* Sharpe 1890. Distinctly more sandy and paler, not so blackish above, as *M. j. horsfieldi*. *Hab.* : Southern and western portions of Australia (Kimberley, Port Headland, Derby).

7. *Mirafra javanica woodwardi* Milligan, 1901. Above not at all blackish, brown, or greyish, but bright cinnamon, abdomen pale cinnamon buff, throat paler, upper and under wing-coverts bright cinnamon. Chest-markings not blackish-brown, but ferruginous. *Hab.* : Sandy portions of Onslow and Point Cloates (Tom Carter coll.).

201. *Poëphila personata* Gould.

Poëphila personata Gould, P.Z.S. 1842. p. 18 ("Northern parts of Australia").

According to what I can find about the distribution of these birds, this form and *leucotis* would occur in the same districts. This is not probable. *P. personata* and *P. leucotis* are most likely subspecies representing each other. The latter

only we have received from Cape York, the former only from Eureka, Behn, and Alligator Rivers.

♂ ♀, Behn River, E. Kimberley, 30. v. 1902 (No. R. 471, 472).

2 ♂♂, South Alligator River, April, May 1903 (Nos. 1298, 1299).

2 ♂♂, 1 ♀, Eureka, Northern Territory, February 1903 (Nos. 1105, 1106, 1108).

202. *Poëphila acuticauda* (Gould).

Amadina acuticauda Gould, *P.Z.S.* 1839, p. 143 (N.W. coast of Australia).

♂ ♀, Thompson's Springs, E. Kimberley, May and June 1902 (Nos. R. 468, 470).

♂ ♀, Lennard River, Derby, January 1902 (Nos. 392, 393).

♀, Margaret River (crossing Hall's Creek Road), 20. iv. 1902 (No. R. 469).

2 ♂♂, Eureka, February 1903 (Nos. 1107, 1109).

♂, 20 miles west of South Alligator River, 2. v. 1903 (No. 1297).

203. *Poëphila gouldiae* (Gould).

Amadina gouldiae Gould, *P.Z.S.* 1844, p. 5 (N.W. Australia).

Poëphila mirabilis Des Murs, *Iconogr. Orn.* pl. iii. (1845).

It has now been proved beyond doubt that the red-headed and black-headed "Gouldian Finches," as well as the yellow-headed "*P. armitiana*," are merely aberrations of one species. One might call it "dimorphic," for, in fact, in most cases the same individual retains its red or black head throughout life, and cases in which the black head moults into a red one, or *vice versa*, are apparently rare. The name of the species is *Poëphila gouldiae*! This name was published in 1844. When Messrs. Hombron & Jacquinot first figured this bird in their *Voyage au Pôle Sud* they did not bestow a specific name on it, but merely called it "*Poephile admirable*." It was not before 1845 that Des Murs printed the name *P. mirabilis* and figured both the black **and** the red-headed varieties. The name of the species is therefore clearly *P. gouldiae*.

♂ ad., Eureka, Northern Territory, 10. i. 1903 (No. 1023). Red-headed!

♂ ad., Thompson's Springs, E. Kimberley, 2. vi. 1902 (No. R. 467). Black-headed!

♀, 20 miles west of South Alligator River, Northern Territory 2. v. 1903 (No. 1296).

♀ juv., Thompson's Springs, E. Kimberley, 2. vi. 1902 (No. R. 473).

204. *Bathilda ruficauda clarescens* Hart.

Bathilda ruficauda clarescens Hart., *Nor. Zool.* 1899, p. 427 (Cape York).

The typical larger and darker *ruficauda* is from N. S. Wales and South Queensland. *B. r. clarescens* is a much paler subspecies.

3 ♂♂, 4 ♀♀, 2 juv., Alligator River, November 1902, September 1903 (Nos. 812, 1626 to 1629, 1632, 1633, 1634, 1636).

205. *Munia pectoralis* (Gould).

Donacola pectoralis Gould, *B. Austr.* iii. pl. 95 (1848).

♂ ad., Eureka, 7. i. 1903 (No. 1022).

206. **Munia flaviprymna** (Gould).

Domaola flaviprymna Gould, *P.Z.S.* 1845. p. 80 (the type came from the Victoria River!).

♂, evidently adult, Victoria River, Northern Territory, 30. vi. 1902 (No. R. 582). "Iris black. Feet and bill dull blue." Exactly like the type and the one in the British Museum.

"♀," Victoria River, 30. vi. 1902 (No. R. 581). "Iris black. Feet and bill dull blue."

This specimen differs from the male as follows: the crown and hind-neck are not pale grey-buff, but buffy grey with hoary grey-brown edges to the feathers; the throat, instead of being creamy buff, is creamy buff with dark chestnut edges to the feathers! Can that be the regular female of *M. flaviprymna*? Or can *M. flaviprymna* be a stage of *M. castaneothorax*? It seems hardly possible, but the similarity of the upperside is suggestive.

Here again is a case of research for Australian scientific collectors. A series must be collected; egg-hunting alone cannot settle the point.

207. **Munia castaneothorax** (Gould).

Amadina castaneothorax Gould, *Syn. B. Austr.* pt. ii. (1837).

♂, Victoria River, Northern Territory, 30. vi. 1902 (No. R. 583).

7 ♂♂, Eureka, Northern Territory, January 1903 (Nos. 1025 to 1031).

2 ♀♀, Alligator River, September 1903 (Nos. 1630, 1631).

208. **Emblema picta** Gould.

Emblema picta Gould, *P.Z.S.* 1842. p. 17 (N.W. coast of Australia).

♂ ad., Coongan River, 5. iv. 1901 (No. R. 125).

209. **Taeniopygia castanotis** (Gould).

Amadina castanotis Gould, *P.Z.S.* 1836. p. 105 (Australia).

♀ imm., Condon Road, 15. v. 1901 (No. R. 4).

210. **Stictoptera annulosa** (Gould).

Amadina annulosa Gould, *P.Z.S.* 1839. p. 143 (N.W. coast of Australia).

♀ ad., Crawford Springs, Northern Territory, 4. vii. 1902 (No. R. 584). (Perhaps subspecies of *bichenowi*.)

211. **Neochmia phaeton** (Hombr. & Jacq.).

Fringilla phaeton Hombr. & Jacq., *Ann. Soc. Nat.* (2) xvi. p. 314 (1841: Australia).

1 ♂, Eureka, Northern Territory, 24. i. 1903 (No. 1024).

1 ♂, Alligator River, 60 miles from coast, 26. x. 1903 (No. 1715).

212. **Artamus minor** Vieill.

Artamus minor Vieillot, *Nour. Dict. d'Hist. Nat.* xvii. p. 298 (1817 : Australia).

♂ ♀, Hall's Creek, 29. iv. 1902 (Nos. R. 464, 465).

♂ ad., Eureka, Northern Territory, 5. ii. 1903 (No. 1110).

♀ juv., Nellie Creek, Northern Territory, 18. ii. 1903 (No. 1111). " Iris dark brown, feet black, bill blue with black tip."

213. **Artamus cinereus** Vieill.

Artamus cinereus Vieillot, *Nour. Dict. d'Hist. Nat.* xvii. p. 297 (1817 : Timor!).

5 ♂♂, Eureka, Northern Territory, January, February 1903 (Nos. 983, 1061, 1062, 1063, 1063A).

2 ♂♂, South Alligator River, April 1903 (Nos. 1252, 1253).

214. **Artamus personatus** (Gould).

Ocypterus personatus Gould, *P.Z.S.* 1840. p. 149 (" Southern and Western Australia").

1 ♂, Margaret River Crossing, 20. iv. 1902 (No. 463).

" Iris black, feet black, bill blue with black point."

215. **Artamus leucorhynchus leucopygialis** Gould.

Artamus leucopygialis Gould, *P.Z.S.* 1842. p. 17 (Australia).

Artamus leucorhynchus parvirostris Hartert, *Nor. Zool.* 1899. p. 424 (Cape York) ; cf. *Nor. Zool.* 1901. p. 170.

4 ♂♂, Lewis Island, N.W. Australia, June, July 1901 (Nos. R. 172 to R. 175).

1 ♂, Woolwonga, Northern Territory, 7. ix. 1902 (No. 753).

4 ♂♂, 4 ♀♀, South Alligator River, March, April, May 1903 (Nos. 771, 1254, 1255, 1256, 1258 to 1261).

216. **Dicrurus bracteatus** Gould.

Dicrurus bracteatus Gould, *P.Z.S.* 1842. p. 132 (" the Eastern and Northern coasts of Australia").

♂ ♀, Burundie, Northern Territory, 28. vii. 1902 (Nos. R. 624, R. 625).
" Iris red."

2 ♂♂ ad., Mary River, Northern Territory, September 1902 (Nos. 755, 759).

♂, McKinley River, Northern Territory, 23. ix. 1902 (No. 760).

10 ♂♂, 3 ♀♀, On, and near, Alligator River, October, November 1902, June, July, August, September 1903 (Nos. 756, 757, 758, 1266 to 1271, 1548, 1712, 1713, 1714).

217. *Oriolus flavocinctus flavocinctus* (King).

Minutes flavocinctus King, *Survey Intertrop. Coasts Australia*, ii. p. 419 (182 - ? : N. Australia).

♂ ad., Burundie, Northern Territory, 28. vii. 1902 (No. R. 612).

♂ ad., Mary River, Northern Territory, 14. ix. 1902 (No. 723).

6 ♂♂, 4 ♀♀, On, and near, Alligator River, October 1902, May, June, September 1903 (Nos. 722, 724, 1308 to 1312, 1654, 1658, 1659).

218. *Oriolus viridis affinis* Gould.

Oriolus affinis Gould, *B. Austr.* i. Intro. p. liii.

♂, Behn River, East Kimberley, 30. v. 1902 (No. R. 414). "Iris pink, feet dull leaden blue, bill reddish brown."

♂, Eureka, Northern Territory, 12. i. 1903 (No. 1011).

♂ ♀, 25 miles east of South Alligator River, June, August 1903 (Nos. 1272, 1547).

219. *Sphecotheres flaviventris* Gould.

Sphecotheres flaviventris Gould, *P.Z.S.* 1849. p. 111 (Cape York).

♂ ad., McKinley River, Northern Territory, 20. ix. 1902 (No. 725).

♂ juv., ♀, Mary River, Northern Territory, 2. x. 1902 (Nos. 719, 720).

2 ♂ ad., 2 ♂ juv., Eureka, Northern Territory, February, March 1903 (Nos. 1064, 1065, 1072, 1073).

2 ♂ ad., 1 ♂ juv., 2 ♀♀, Alligator River, October 1902, September, October 1903 (Nos. 718, 722, 1655, 1656, 1657).

220. *Corvus coronoides* Vig. & Horsf.

Corvus coronoides Vig. & Horsf. *Trans. Linn. Soc. Lond.* xv. 1827, p. 261 (Australia).

2 ♂♂, 2 ♀♀, South Alligator River, April, May, June 1903 (Nos. 1340, 1342, 1343, 1344).

Mr. Tunney marked the iris as being white in three of these specimens. In the fourth (No. 1343), which is evidently a young bird, the iris is marked as being brown. These statements do not agree with Mr. North's theory. Mr. North recognises three Australian species of *Corvus* :—

1. *Corvus coronoides* : with white bases to the feathers, and brown iris.

2. *Corvus bennetti* : of much smaller size than *C. coronoides*, with white bases to the feathers, and white iris.

3. *Corvus australis* : of large size, with dusky grey bases to the feathers, and white iris.

Our birds from the Alligator River are certainly not *C. australis*, nor are they *C. bennetti*. They agree with the birds called *C. coronoides*, but the iris of the adult ones is, according to Mr. Tunney, white. The same statements of the iris, in adult birds, being white, occurs on labels of crows, collected by Mr. Tom Carter at Point Cloates. Our Australian friends must find out whether *C. coronoides*, when fully adult, has a white iris, or whether the N.W. Australian birds differ in that respect from typical *C. coronoides*.

221. *Chlamydera nuchalis* (Jard. & Selby).

Ptilonochynchus nuchalis Jard. & Selby, *Ill. Orn.* t. 103 (1838: no locality).

C. nuchalis orientalis is a very closely allied, though recognisable subspecies. It is smaller, and has whitish tips to the feathers of the crown, but the more spotted back is not a character to distinguish it by.

♀ (?), Mt. Anderson, 31. x. 1901 (No. R. 279).

♂ ♀, Negri River, East Kimberley, 22, 23. v. 1902 (Nos. R. 426, R. 427).

♂ ♀, Burundie, Northern Territory, 28. vii. 1902 (Nos. R. 602, R. 604).

♂, Brock's Creek, Northern Territory, 2. viii. 1903 (No. R. 603).

♂ ♀, Eureka, Northern Territory, January, February 1903 (Nos. 1012, 1066).

1 ♂, 2 ♀ ♀, South Alligator River, November 1902, May, June 1903 (Nos. 813, 1262, 1302).

DESCRIPTION OF A NEW LORICARIID FISH OF THE GENUS *XENOCARA* FROM VENEZUELA.

BY C. TATE REGAN, B.A.

Xenocara rothschildi spec. nov.

Depth of body 5-5½ in the length, length of head 2¾ (males) or 3 (females). Head about 1½ as long as broad and twice as long as deep. Diameter of eye 6½-8½ in the length of head, interorbital width 2-2½, length of snout 1½-1¾. Length of mandibular ramus 2½-2¾ in the interorbital width. Snout with tentacles. Interoperculum with 9-13 spines, the longest ¼-⅔ the length of head. 23 or 24 scutes in a longitudinal series, 6 or 7 between dorsal and adipose fins, 10 or 11 between anal and caudal. Dorsal 17, the first ray ⅔-¾ the length of head, the last, when laid back, separated by 1 or 2 scutes from the spine of the adipose fin; length of base of dorsal a little less than its distance from the spine of the adipose fin, which is preceded by a keel formed by 1 or 2 scutes. Anal 14. Pectoral spine extending to anterior third or middle of ventral. Caudal obliquely truncate, the lowest ray nearly as long as the head. Caudal peduncle 2½-2¾ as long as deep. Uniform dull greyish, the fins dusky; a dark spot at the base of the first interradial membrane of the dorsal.

San Esteban, near Porto Cabello, Venezuela.

Five specimens, 113 to 175 mm. in total length, collected by A. Mocquerys.

This very distinct species has a shorter dorsal fin than any other of the genus; it is allied to *X. occidentale* Regan, from E. Ecuador, and to *X. chagresi* Eigenmann, from Panama.

23 SEP 1905

NOVITATES ZOOLOGICAE.

Vol. XII.

SEPTEMBER, 1905.

No. 2.

FURTHER CONTRIBUTIONS TO OUR KNOWLEDGE OF THE ORNIS OF THE SOLOMON ISLANDS.

BY THE HON. WALTER ROTHSCILD, PH.D., AND DR. ERNST HARTERT.

(PLATE X.)

IN *Nov. Zool.* viii., 1901, pp. 179-89, 373-82, we have discussed the birds of the islands Kulambangra, Florida, and Guadalcanar; in vol. ix., 1902, pp. 581-94, we wrote about those from Isabel (Bugotu) and Treasury Island. The indefatigable collector Mr. Albert S. Meek has recently returned to the Solomon Archipelago, and has succeeded in making very valuable collections on Rendova, Gizo, New Georgia, Choiseul, and Bougainville, notwithstanding the bad climate and the notorious ferocity of the natives. The birds collected by Mr. Meek are of course of the highest interest, because our knowledge of the birds of Rendova and New Georgia was imperfect, and of those of Gizo, Choiseul, and Bougainville we knew heretofore nothing. It is true that Dr. Julius von Madarász, in *Természeti Füzetek* xxv., 1902, pp. 350-51, described nine species as coming from Bougainville, but we have shown (*Annales Mus. Nat. Hongar.* i., 1903, pp. 447-50) that these did not come from Bougainville, but from German New Guinea. Needless to say that the large collection received from Mr. Meek fully bears out our conclusions, *l.c.*

The number of remarkable new species in the collection from the northern islands is surprisingly small. This is, however, explained by the fact that the ornis of Bougainville, Choiseul, and Isabel is, on the whole, the same. Moreover, Mr. Meek was of course not able to penetrate far into the interior, but had to restrict his collecting to the coastal portions of the islands. There can be no doubt whatever that the mountains in the interior of these islands, and especially those of Bougainville, are still inhabited by unknown, differentiated forms, although Meek's collections give a splendid idea of the zoogeographical relations of these islands.

A few startling, wonderful discoveries were also made: the remarkable new pigeon *Microgoura meeki*, the gaily *Halegoua bougainvilleri*, and the sombre *Corvus meeki*, while in other groups highly interesting new subspecies were discovered, as, for example, in the genera *Astur*, *Pitta*, and *Graucalus*.

The collection shows the following interesting facts:—

1. The ornis of the islands of the northern chain—*i.e.* the three islands of Bougainville, Choiseul and Isabel—is generally alike; only in comparatively few cases representative subspecies are found on the various islands of the northern chain.

2. The ornith of these northern islands differs remarkably from that of the New Georgia, or central group, as we may call it.

3. The fauna of the islands of this central group—i.e. the islands of Gizo, or Guizo, Kulambangra, Rendova, and New Georgia—is generally the same: only in a very few cases representative forms are found on these islands, while nearly always (except when the same forms are spread over the whole, or nearly the whole, archipelago) the forms from the northern chain, as well as those from Guadalcanar, differ from those of the central group.

4. We can thus distinguish the following geographical groups of islands in the Solomon Archipelago:

- (a) The northern chain (Bougainville, Choiseul, Isabel).
- (b) The central group (New Georgia, Kulambangra, Gizo, Rendova).
- (c) The Guadalcanar group (Guadalcanar and Florida).
- (d) The southern group (San Christoval, Ugi).

The large islands of Malaita and Rennel, as well as many smaller, less important islets, remain unknown, but we hope that collections from some of them will reach us before long, as well as from San Cristoval, which has many very distinct birds, not yet represented in the Tring Museum.

Mr. Meek is to be congratulated on having achieved a visit to Choiseul and Bougainville, which are probably among the most difficult islands to visit, on account of the want of communication and the hostility of the natives, and we hope that he will long continue his successful explorations of the islands of the Papuan Region.

1. *Megapodius duperreyi* eremita Hartl.

[*Megapodius duperreyi* Lesson & Garn., *Bull. Soc. Nat.* viii p. 113 (1826—Dorey).]
Megapodius eremita Hartl., *P. Z. S.*, 1867, p. 830 (Echiquier Is.).

3 ♂♂, 2 ♀♀, Rendova, February and March 1904 (Nos. A. 1214, 1294, 1333, 1345, 1389).

"Iris hazel (brown); feet black (greenish slate); bill dull yellow (yellowish)."

1 pull., Choiseul, 8. xii. 1903 (No. A. 892).

1 ♂, 3 ♀♀, 1 pull., Bougainville, April and May 1904 (Nos. A. 1519, 1533, 1656, 1715, 1755).

An egg from Choiseul is of a vinaceous flesh-colour, and measures 81.5 × 50.5 mm.

2. *Ptilinopus superba* (Temm.).

Columba superba Temminck, in Kuip, *Les Pigeons*, p. 75, pl. 33 (1811)

2 ♂♂, New Georgia, March, 1904 (Nos. A. 1396, 1432).

2 ♂♂, Rendova, February and March 1904 (Nos. A. 1348, 1473).

1 ♂, 1 ♀, Choiseul, December 1903 (Nos. A. 1002, 1031).

4 ♂♂, 2 ♀♀, Bougainville, April 1904 (Nos. A. 1491, 1529, 1590, 1626, 1662, 1672).

"Iris yellow (pale yellowish); feet purplish red; bill, ♂ green-slate (slate ♀)."

An egg was taken on Choiseul on January 11th, 1904. It is very smooth, though without gloss, of a milky white, and measures 32 × 21.6 mm.

3. *Ptilinopus solomonensis solomonensis* Gray.

Ptilinopus solomonensis Gray, *Ann. d. Mag. Nat. Hist.* (4) v. p. 328 (1870—♀ “Solomon Islands”).

1 ♂, New Georgia, 9. iii. 1904 (No. A. 1416).

“Iris yellow; feet purplish red; bill green-slate.”

2 ♀ ♀, Rendova, February 1904 (Nos. A. 1187, 1265).

4. *Ptilinopus lewisii lewisii* Rams.

Ptilinopus lewisii Ramsay, *Proc. Linn. Soc. N. S. Wales* vi. p. 724 (1881—*ex op. cit.* iv., 1879, pp. 73, 74: “Lango; Gaudalcanar”).

1 ♀, Rendova, 5. ii. 1904 (No. A. 1186).

1 ♂, 3 ♀ ♀, Gizo, November 1903 (Nos. A. 713, 736, 811, 851).

2 ♂ ♂, 1 ♀, Choiseul, December 1903 (Nos. A. 951, 1003, 1059).

1 ♂, Bougainville, 22. iv. 1904 (No. A. 1623).

“Iris yellow (dull yellow, reddish yellow); feet dark purple (purplish red); bill bright straw-yellow (greenish yellow).”

5. *Carpophaga rufigula* Salvad.

Carpophaga rufigula Salvadori, *Atti R. Acc. Sc. Torino* xiii. p. 536 (1878—San Christoval Solomon Is.).

2 ♂ ♀, Rendova, February 1904 (Nos. A. 1323, 1337).

2 ♂ ♂, Gizo, October 1903 (Nos. A. 624, 625).

1 ♂, Bougainville, 7. v. 1904 (No. A. 1754).

“Iris dark red; feet purplish red (bright purple); bill dark slate-colour.”

We have not been able to compare examples from San Christoval!

6. *Carpophaga pristinaria* Bp.

Carpophaga pristinaria Bonaparte, *Consp. Av.* ii. p. 36 (1854—“St. George Island”).

2 ♂ ♂, 1 ♂ ?, Gizo, October and November 1903 (Nos. A. 627, 671, 740).

1 ♀, Choiseul, 18. xii. 1903 (No. A. 971).

3 ♂ ♂, 2 ♀ ♀, Bougainville, April and May 1904 (Nos. A. 1554, 1665, 1674, 1728, 1733).

Two eggs, belonging to the ♀ No. A. 971, were taken on Choiseul, 18. xii. 1903. They are white, almost without any gloss, and measure 47×33.2 and 52×33 mm.

7. *Columba philippinae* (Rams.) ??

Lanthocetus philippinae (sic!) Ramsay, *Proc. Linn. Soc. N. S. Wales*, vi. p. 721 (1881—Ugi, Solomon Is.).

1 juv. (“♂?”) Choiseul, 8. xii. 1903 (No. A. 891).

“Iris and feet dirty yellow, bill slaty.”

1 ♂ fere ad., Bougainville, 10. iv. 1904 (No. A. 1490).

“Iris yellow and red; feet pale yellow; bill slate and dull red.”

As there are, to our knowledge, no specimens of *C. philippinae*, nor of the closely allied *C. pallidiceps* from Duke of York Island, in Europe, we are not able to say if our specimens belong to either of them. We are inclined to think that they belong to a third subspecies, but may be *philippinae*. The crowns are

moulting into french grey, the throats are whitish grey. The feathers of the body-plumage above are slaty or brownish black with wide opalescent greenish and reddish tips, those of the under surface slate-grey, widely tipped with opalescent glossy green on the breast, more narrowly and less distinctly on the abdomen.

8. *Macropygia rufa rufocastanea* Rams.

Macropygia rufocastanea Ramsay, *Proc. Linn. Soc. N. S. Wales* iv. p. 314 (1879—Lango, Guadalcanar).

1 ♀, Rendova, 24. ii. 1904 (No. A. 1364).

2 ♂♂, 2 ♀♀, New Georgia, 7, 8, 10. iii. 1904 (Nos. A. 1397, 1404, 1421, 1431).

1 ♀, Choiseul, 22. xii. 1903 (No. A. 1008).

1 ♂, Bougainville, 12. v. 1904 (No. A. 1777).

“Iris yellowish red (crimson); feet red; bill black.”

9. *Coryphoenas crassirostris* (Gould).

Turacoenas crassirostris Gould, *P. Z. S.* 1856, p. 136 (Guadalcanar).

1 ♀ ad., 1 ♀ juv., Rendova, 26. ii. 1904 (Nos. A. 1378, 1379).

“Iris yellow (dull yellow in the young); feet purplish red—black in the young); bill brick-red in the adult.”

10. *Chalcophaps stephani mortoni* Rams.

Chalcophaps mortoni Ramsay, *Proc. Linn. Soc. N. S. Wales* vi. p. 725 (1881—Ugi, Solomon Is.).

2 ♂♂, Rendova, 17, 28. ii. 1904 (Nos. A. 1324, 1384).

2 ♀♀, New Georgia, 9. iii. 1904 (Nos. A. 1409, 1414).

4 ♂♂, Gizo, 28. x.; 1, 2, 10. xi. 1903 (Nos. A. 663, 711, 717, 873).

1 ♂, 1 ♀, 1 ♀ juv., Choiseul, 7, 28, 29. xii. 1903 (Nos. A. 887, 1060, 1064).

5 ♂♂, 1 ♀, Bougainville, 11, 15, 20, 21. iv.; 5. v. 1904 (Nos. A. 1493, 1539, 1541, 1595, 1607, 1735).

The young ♀ differs from the adult in having the top of the head and hind-neck chestnut without any plum-coloured tinge and without grey on the forehead.

“Iris brown; feet bright red; bill yellow.”

11. *Phlegoenas beccarii intermedia* subsp. nov.

Subspeciei *Phl. beccarii johannae* dictae simillima, sed abdomine pulliore, purpurascentiore, jugulo grisescentiore.

This new form is nearest to *Phl. becc. johannae*, but differs by the less whitish foreneck and chest, which are more greyish, and by the colour of the abdomen, which is darker and more purplish bronze. The bronze colour of the upperside has a more greenish, less reddish tinge.

Type: ♂ ad., Bougainville, 17. iv. 1904, No. A. 1569, A. S. Meek coll.

Mr. Meek sent, in addition to the type, the following two specimens:

♂ ad., New Georgia, 14. iii. 1904 (No. A. 1461).

♂ ad., Gizo, 14. ii. 1903 (No. A. 850).

These two specimens from the New Georgia group are more reddish bronze above, and the abdomen appears to be slightly darker. It is quite possible that

we have here a further subspecies, but until more specimens, especially from Bougainville, can be examined, this question must remain in abeyance.

"Iris brown (dark brown); feet red (dark red, bright purplish red); bill black."

There is no doubt that *beccarii*, *johannae*, *solomonensis* (= *granti*), are subspecies of one species. *Phl. beccarii solomonensis* Grant 1888 (= *granti*, Salvadori 1893), differs from *intermedia* in being considerably larger and much more purplish on the back, while the grey colour of the throat is darker. We do not reject *solomonensis* Grant on account of there being already a *salomonis* Rams., the two names being obviously different. We also think it very likely that the specimens called *beccarii* from British New Guinea will eventually be separable, as the only Arfak skin we have seen is less greenish above.

12. *Microgoura meeki* Rothsch.

Microgoura meeki Rothschild, Bull. B. O. C. xiv. p. 78 (May 1904); (Nov. Zool. 1904, Pl. XXI).

♂ ♀ ad. Bill chalky blue, tip black, lower mandible reddish. Short velvety feathers on chin; lores, sides of mouth and line over the forehead black. Top of head and scanty feathers on sides of same pale greyish blue; crest-feathers pale bluish grey, rather uniform, but not spotty, as in the plate. Chest and mantle bluish grey. Lower back and rump greyish brown; upper tail-coverts dark brown with purplish and greenish reflexions; primaries drab-brown, inner webs with a greyish tinge; secondaries dull cinnamon, inner webs more or less greyish brown. Wing-coverts greyish brown. Rectrices dark purple. Breast and abdomen bright rufous-cinnamon. Under tail-coverts glossy brownish black, with cinnamon edges. Under wing-coverts bright cinnamon. Wing, ♂ 195 to 197, ♀ about 180 to 190 mm.; tail 100 to 105; bill, from base of cere, 34 to 35; metatarsus 60; middle toe with claw 40, hind toe with claw about 13 mm.

This remarkable new pigeon agrees with none of the known genera, so that a new one had to be created for it. The cere is naked to the forehead, the soft portion from the end of the hard rhamphotheca to the feathering on the forehead being nearly 25 mm. long, and about 13 mm. wide at the base of the forehead. A large flat crest, consisting of feathers with segregated barbs, rising from the occiput. Remiges very hard and stiff. Tail short and rounded. Feet and legs bare to above the heel-joint, covered in front with scutes, which, however, become indistinct on the upper third.

Mr. Meek sent seven specimens, of which six are in the Tring Museum.

3 ♂♂, 3 ♀♀, Choiseul, January 1904 (Nos. A. 1091, 1094, 1108, 1109, 1110, 1126).

An egg was taken on January 10th. It is of a rich cream-colour, and measures 43 × 31.3 mm.

13. *Caloenas nicobarica* (L.).

Columba nicobarica Linnaeus, Syst. Nat. ed. x. p. 164 (1758: "Habitat in insula Nicobar prope Pegu indicum").

1 ♂, 2 ♀♀, Rendova, February 1904 (Nos. A. 1181, 1271, 1365).

1 ♂, 2 ♀♀, Gizo, October 1903 (Nos. A. 660, 679, 680).

1 ♂, 1 ♀, Choiseul, January 1904 (Nos. A. 1122, 1150).

1 ♂, 1 ♀, Bougainville, April and May 1904 (Nos. A. 1660, 1779).

14. *Eulabeornis woodfordi* (Grant) (?)

Rollulus woodfordi Grant, *Ann. & Mag. Nat. Hist.* (6) iv, p. 320 (1889: Guadalcanar): *Cat. B. Brit. Mus.* xxiii, p. 50, pl. vii.

♂ ♀, Bougainville, 30. iv., 5. v. 1904 (Nos. A. 1700, 1734).

"Iris dark red: feet, ♂ slate, ♀ pale ashy blue: bill slate."

Of *Eulabeornis woodfordi* only the type in the British Museum appears to be known. Our birds, which are apparently adult, agree fairly well with the type, though not in all details. The bill is in the skins whitish, yellowish and slaty towards the base. The description as "slate" on the labels is apparently made "cum grano salis." The type of *E. woodfordi* has a blackish bill. The under tail-coverts have white spots. Wing, ♂ 155, ♀ 148; bill, ♂ (from end of feathering) 43; metatarsus about 60 mm.

We doubt that the type is "immature."

15. *Porphyrio smaragdinus* Temm.

Porphyrio smaragdinus Temminck, *Pl. Cul.* v, Taf. 421 (1826: Banda, Java).

♂ ad. Choisenl, 11. xii. 1903 (No. A. 917).

16. *Nycticorax mandibularis* Grant.

Nycticorax mandibularis Grant, *P. Z. S.* 1888, p. 203 (Guadalcanar).

1 ♂ ad., 1 ♀ ad., 1 ♂ juv., Rendova, February 1904 (Nos. A. 1197, 1288, 1307).

"Bill black, lower mandible greenish yellow with blackish tip."

Though a distinct form, *N. mandibularis* is probably the representative subspecies of *N. caledonicus* on the Solomon Islands.

17. *Anas superciliosa pelewensis* Hartl. & Finsch.

[*Anas superciliosa* Gmelin, *Syst. Nat.* i. 2, p. 537 (1788: ex Latham—"hab. in Nova Seelandia").
Anas superciliosa var. *pelewensis* Hartl. & Finsch, *P. Z. S.* 1872, p. 108 (Pelew Islands).

There is no doubt that the specimens from the Pelew Islands, Samoa, Fiji, and most conspicuously those from the Solomon Islands, are very much smaller (wings 1 to 2½ inches shorter, bill smaller, etc.) than those from Australia and New Zealand. To emphasize this fact we use the above nomenclature. *A. s. pelewensis* is the only available name for the small race. *Anas leucophrys* Forster (1844) refers to the New Zealand form, *Anas mülleri* Bonaparte (1856) is a nomen nudum! There is, nevertheless, one difficulty: the specimens from the Kangean Islands, near Java, and those from Java, are also as small, or nearly as small as those from the South Sea Islands, while those from Savu, Timor and Sumba are of the big race. The question, therefore, arises whether there are two small races, one in the Pacific and another on the Sunda Islands, or whether all these form one small race. Against the first possibility stands the fact, that all those small birds are—at least so it seems to us, after having examined a few examples only!—apparently alike, and with the second possibility the distribution does not seem to agree very well. At present we can, therefore, only emphasize the fact that there is, besides the larger *Anas superciliosa superciliosa* from New Zealand and Australia, a small race in the Pacific, which we call *A. superciliosa pelewensis*.

Mr. Meek sent the following specimens :

3 ♂♂, 1 ♀. Rendova, February 1904 (Nos. A. 1254, 1255, 1269, 1344).

1 ♂, Choiseul, 10. xii. 1903 (No. A. 977).

2 ♂♂, Bougainville, May 1904 (Nos. A. 1767, 1771).

"Iris chocolate-brown ; feet dull tan-colour (light tan) ; bill black (slate)."

18. *Astur albogularis* (Gray).

Accipiter albogularis Gray, *Ann. Nat. Hist.* (4) v. p. 327 (1870 : San Christoval).

Astur holomelas Sharpe, *P. Z. S.* 1888. p. 182 (Aola, Guadalcanar).

Astur woodfordi Sharpe, *P. Z. S.* 1888. p. 183 (Guadalcanar).

Astur cersicolor Ramsay, *Proc. Linn. Soc. N. S. Wales*, vi. p. 718 (1882 : Ugi, near San Christoval).

(Cf. *Nor. Zool.* 1901. pp. 379, 380.)

Astur albogularis and *woodfordi* were separated, because the latter has a vinous collar on the hind-neck. We have found that specimens with this collar occur side by side with others without any indication of it, and others again, in which it is more or less indicated and developed. This clearly shows that it is no specific character. When *A. cersicolor* was described, it was suggested that it might be a melanistic aberration of *albogularis*, and when *holomelas* was named the suggestion was made that it might be a melanism of *woodfordi*. We (*Nor. Zool.* 1901, p. 380) also suggested the probability of the black birds being melanistic examples of *A. albogularis* (= *woodfordi*). Now we cannot any longer doubt that this is the case. We have an adult male from Choiseul (No. A. 1105) which has the throat and chest slaty black, towards the abdomen mixed with greyish and white, while the abdomen, thighs and under tail-coverts are pure white. Another male is white below with one small blackish spot on the chest and a vinous-rufous collar above, which encroaches on the underside, a third white below without a collar on the upper surface.

It is thus evident that we have a black-and-white species which varies very much, and is spread over most of the Solomon Islands—in striking opposition to the grey-and-rufous species, which is rather constant in any given locality, but varies locally, thus being separable into a number of subspecies.

Great as the variation is among the adult birds, it is equally striking in the young birds. A male from Rendova has the upperside blackish brown and rufous, the central rectrices slaty grey, gradually merging into pale cinnamon with a grey wash on the outer rectrices, all being barred with blackish bands. Underside rusty buff, each feather with a longitudinal lanceolate spot in the middle, but those of the throat and under tail-coverts uniform, those of the flanks with wide dark brown bars. A female from Choiseul is above much more dark cinnamon, with less black, the middle rectrices more tinged with cinnamon, the underside bright cinnamon with brown stripes on the throat, and brown, variously shaped cross-markings on the rest of the underside. Another female from Choiseul has the chest and breast narrowly barred with brown, on a cream-coloured ground, while a male from the same island has much wider and deeper brown bars. The heads and hind-necks of these birds are white with broad black tips to the feathers.

1 ♂ juv., Rendova, 24. ii. 1904 (No. A. 1372).

1 ♂ ad., New Georgia, 11. iii. 1904 (No. A. 1440).

3 ♂♂ ad., 2 ♀♀ juv., 1 ♂ juv., Choiseul, December 1903, January 1904 (Nos. A. 913, 980, 1040, 1105, 1125, 1162).

"Adults : Iris cadmium-yellow (dirty yellow in a bird molting from the

juvenile plumage, but moult almost completed) (dark brown in No. 1105 (?)—) (golden yellow); ♂ juv. lemon-yellow; ♀ juv. yellow; feet in adults (lemon) yellow, in young ones also yellow; bill black (slate, bluish slate); in young blue-slate with black tip."

The young female, No. 3248 Meek coll., described *Nor. Zool.* 1902, p. 591, of which we already suggested that it might not belong to *A. rufoschistaceus*, is also a young *A. albobularis*.

19. *Astur etorques rubianae* subsp. nov.

Astur supra cano-schistaceus, subtus saturate rufo-cinnamomeus. —Subspeciei *A. c. rufoschistaceus* dictae similis, sed minor, coloribus saturatoribus, pullioribus. ♂ al. 195–200, ♀ al. 206–214 mm.

Hab. Rubiana (New Georgia); Gizo, Rendova (*Type*: ♀ ad. Gizo, 27. xi. 1903, No. A. 652. A. S. Meek coll.)

2 ♂ ad., 2 ♀ ad., Rendova, February 1904 (Nos. A. 1199, 1200, 1268, 1341).

1 ♂ fere ad., 1 ♀ juv., New Georgia, March 1904 (Nos. A. 1410, 1454).

1 ♀ ad., Gizo, 27. xi. 1903 (No. A. 652).

"Iris reddish brown (bright chocolate; feet cadmium (bright yellow); bill black, cere yellow."

20. *Astur etorques rufoschistaceus* R. & H.

Astur rufoschistaceus Rothsch. & Hart., *Nor. Zool.* 1902, p. 590 (Isabel).

2 ♂ ad., 2 ♀ ad., 1 ♂ juv., 1 ♀ juv., Choiseul, December 1903 (Nos. A. 885, 964, 978, 1032, 1082, 1083).

"Ad.: Iris dark brown; feet cadmium; bill black."

21. *Astur etorques bougainvillei* subsp. nov.

Astur subspeciei *A. c. rufoschistaceus* dictae persimilis, sed colore cinereo dorsi, colli, capitisque pallidior, necnon statura minore, haud difficile distinguendus. Al. ♂ 194–199 mm.

Hab. Bougainville Island. (*Type*, No. A. 1556. A. S. Meek coll.)

5 ♂ ad., Bougainville Island, April 1904 (Nos. 1555, 1611, 1619, 1659, 1689).

"Iris brown; feet cadmium; bill black."

The rufous-and-grey *Astur*-group.

In *Nor. Zool.* 1901, p. 380, we united *Astur pulchellus* Rams. and *A. shebae* Sharpe, and in *Nor. Zool.* 1902, p. 590, we described *A. rufoschistaceus* from Isabel as a new subspecies. We were right in considering *A. shebae* to be a synonym of *A. pulchellus*, but not when we concluded from this that the birds from New Georgia were identical with those from Guadalcanar.

Dr. Ramsay most clearly described a bird with pale thighs, and Dr. Sharpe, therefore, was wrong in taking the form with dark thighs from the central group as *pulchellus*, and separating from it the Guadalcanar bird with pale thighs. The difficulty is, that Dr. Ramsay gave as the original locality of his *pulchellus* "Cape Pitt," and later on "Cape Pitt, Guadalcanar." As "Cape Pitt" we find marked on all maps the southernmost point of New Georgia. There must therefore have been an error in the original statement, either that a place on Guadalcanar was called Cape Pitt, or that there was some other misunderstanding, because it is perfectly clear that Dr. Ramsay described the pale-legged form from Guadalcanar, which

is represented on the New Georgia group (New Georgia or Rubiana, Kulambangra, Guizo and Rendova) by one with dark thighs. A careful comparison of the material from the Solomon Islands brings us to the conclusion that the following forms are distinguishable :

1. *Astur etorques etorques* Salvad., 1878—New Guinea and some of the adjacent islands. Colour of upper throat greyish, generally with traces of bars, and more or less merging into that of the breast and abdomen. Many apparently adult specimens have partly barred undersides. Probably some of the forms found on the small islands are again separable.

2. *Astur etorques dampieri* Gurney, 1882—Bismarck Archipelago. Differs apparently in being paler and in having lighter under wing-coverts. We have only seen a few specimens.

3. *Astur etorques bougainvillei* subsp. nov.—Bougainville Island, northern Solomon Islands, and Shortland group. This and all the other forms from the Solomon Islands have the throat and chin grey, sharply divided from the rufous-cinnamon underside. Upper surface pale grey, lighter than in *A. e. rufoschistaceus*. Wing, ♂, 194—199 mm.

4. *Astur etorques rufoschistaceus* Rothsch. & Hart., 1902—Isabel and Choiseul Islands, northern Solomon Islands. Very similar to *A. e. bougainvillei*, but the upper surface a little darker; wings longer. ♂, wing 212—226 mm., ♀, wing 240—251 mm.

5. *Astur etorques pulchellus* Rams. 1881.—Guadalcanar and Florida Islands, Solomon group. At once distinguishable by its light thighs and under wing-coverts.

6. *Astur etorques rubianae* subsp. nov.—Rubiana (New Georgia) group : New Georgia, Rendova, Gizo. Darker and smaller than *A. e. rufoschistaceus*, especially the under surface of a deeper, nearly chestnut colour. Wing, ♂ 195—200; ♀ 211—214 mm.

22. *Baza subcristata gurneyi* Rams.

Baza gurneyi Ramsay, *Journ. Linn. Soc., Zool.* xvi. p. 130 (1881 : Solomon Islands). (Cf. *Nov. Zool.* 1901, p. 379.)

2 ♂♂, 4 ♀♀, Rendova, February 1904 (Nos. A. 1236, 1238, 1250, 1252, 1343, 1362).

2 ♂♂, Gizo, November 1903 (Nos. A. 757, 821).

2 ♂♂, 1 ♀, Choiseul, January 1904 (Nos. A. 1086, 1151, 1152).

3 ♀♀, Bougainville, April, May 1904 (Nos. A. 1633, 1749, 1750).

"Iris chrome-yellow (bright yellow); feet pale slate (horn-colour); bill slate and black (blue-slate and black)."

23. *Falco severus* Horsf.

Falco severus Horsfield, *Trans. Zool. Soc.* xiii. p. 135 (1821 : Java).

1 "♀," Gizo, Solomon Islands, 12. xi. 1903 (No. A. 830).

"Iris dark brown; feet lemon-yellow; bill black, slaty at base."

Messrs. Meyer & Wilesworth have separated three races of this species (*B. of Celebes*, i. p. 84).

1. *Falco severus indicus* from India. Said to be paler above, with a brownish slaty tail, and with tail and wings barred below on the inner webs.

2. *Falco severus severus* from the Malayan Archipelago. Intermediate between *F. s. indicus* and *F. s. papuanus*.

3. *Falco severus papuanus* from New Guinea. Said to be darker above and below, with darker tail and entirely unbanded wings and tail.

The examination of our material clearly shows that the supposed "*papuanus*" is not separable from typical *severus*. The authors of "*papuanus*" should have hesitated in naming it from their scanty material. They were evidently not aware that the bars on the underside of the wings and tail disappear in old birds, while they are most pronounced in young ones.

With regard to the Indian subspecies we cannot speak confidently, but the few specimens which we were able to compare seem to confirm the theory of Messrs. Meyer & Wigglesworth that it is a lighter form. In that case we would have to recognise one form which is spread all over the archipelago, another inhabiting continental India and Ceylon.

24. *Pseudopteryx solomonensis* Hart.

Pseudopteryx solomonensis Hartert, *Bull. B. O. C.* Nov. 1901, p. 25 (Isabel).

2 ♂♂, Choiseul, January 1904 (Nos. A. 1123, 1142). "Iris chrome-yellow; feet ashy grey; bill blackish (slate), tip whitish."

25. *Ninox jacquinoti* (Bp.).

Athene jacquinoti Bonaparte, *Conspectus*, Av. i. p. 42 (1850; ex Hombron & Jacqu.; hab. "Oceania." Typ. loc., "San Jorge, Iles Salomon," vide Jacqu. & Pucheran). (Cf. *Nov. Zool.* 1902, p. 592.)

3 ♂♂, 3 ♀♀, Choiseul, December 1903 (Nos. A. 910, 911, 914, 915, 1048, 1049).

2 ♂♂, 2 ♀♀, Bougainville, April, May 1904 (Nos. A. 1505, 1506, 1507, 1772).

26. *Eos cardinalis* (Gray).

Loricus cardinalis G. R. Gray, *Gen. B., App.* p. 20 (1849; ex Hombr. & Jacqu., Solomon Islands).

5 ♂♂, 1 ♀, Rendova, February 1904 (Nos. A. 1196, 1207, 1216, 1253, 1270, 1351).

2 ♂♂, Gizo, October 1903 (Nos. A. 620, 626).

3 ♂♂, 1 ♀, Choiseul, December 1903 (Nos. A. 930, 940, 953, 1010).

5 ♂♂, 1 ♀, Bougainville, April 1904 (Nos. 1487, 1502, 1527, 1550, 1592, 1612).

A young bird from Choiseul resembles the old ones, but the red is duller, the bill for the most part blackish. This beautiful Parrakeet seems to occur on the Solomon Islands only, but there it is apparently common on all the larger and median islands, at least on those from which we have received collections.

27. *Trichoglossus haematodus massena* Bp.

Trichoglossus massena Bonaparte, *Rev. & Mag. de Zool.* 1854, p. 157 ("Insulae Polynesiæ"). (Cf. *Nov. Zool.* 1901, pp. 70, 186.)

2 ♂♂, Rendova, February 1904 (Nos. A. 1287, 1371).

3 ♂♂, 2 ♀♀, New Georgia, March 1904 (Nos. A. 1420, 1426, 1427, 1435, 1436).

4 ♂♂, 2 ♀♀, Gizo, November 1903 (Nos. A. 776, 777, 789, 790, 791, 796).

2 ♂♂, 2 ♀♀, Choiseul, December 1903 (Nos. A. 881, 990, 994, 999).

3 ♂♂, 2 ♀♀, Bougainville, April 1904 (Nos. A. 1559, 1560, 1639, 1669, 1686, 1688).

The abdomen is generally green, the upper portion with red, the lower ones with yellow bases to the feathers ; but in some there is a rather distinct blue-black line between the red breast and the green abdomen, while a male (No. A. 990) from New Georgia has a large blue-black patch covering the upper part of the abdomen. In the specimens from the Solomon Islands the green nuchal band is generally, but not always, interrupted in the middle, while in those from New Guinea and the Loniades it is more regularly complete and generally more yellowish. There is, however, no constancy in these characters.

28. *Charmosynopsis placentis pallidior* subsp. nov.

Similis subspeciei *Ch. placentis subplacens* dictae, sed colore supra pallidiore, macula auriculari dilutius distinguenda.

4 ♂♂, 2 ♀♀, Bougainville, end of April and first half of May 1904 (Nos. A. 1699, 1714, 1717, 1721, 1757, 1758).

"Iris, ♂ red, ♀ dull yellowish red; feet dull red; bill rose-madder (red)."

While the specimens from Bougainville, the only island of the Solomons whence we know of this bird, agree with those from New Britain, New Ireland, and New Hanover, those from the mountains of British New Guinea are darker green above, and have the auricular patch much lighter. We have thus three subspecies :

1. *Ch. placentis placentis* (Temm.). Original locality Utanata, Dutch New Guinea. With a large blue patch on the uropygium !

2. *Ch. placentis subplacens* (Scl.). Original locality, mountains near Naiabui in S.E. New Guinea. Without a blue patch on the uropygium, colour of upper surface darker green, blue auricular patch darker blue.

3. *Ch. placentis pallidior* Rothsch. & Hart. Type : ♂ ad. Bougainville, 8. v. 1904, No. A. 1757, Meek coll. Without a blue patch on the uropygium, colour of upper surface paler green, auricular patch lighter blue; wings generally slightly shorter.

Specimens from German New Guinea, Milne Bay, and Woodlark Island seem to be somewhat intermediate between *subplacens* and *pallidior*, but we have only examined a few.

We see no reason for distinguishing between the genera *Charmosynopsis* and "*Hypocharmosyna*."

29. *Charmosynopsis margarethae* (Tristr.).

Charmosyna margarethae Tristr., *Ibis* 1879, p. 442, pl. xii. (Ugi and San Cristoval, Solomon Islands). (Cf. *Nor. Zool.* 1901, pp. 187, 378.)

1 ♀ immat., Bougainville, i. v. 1904 (No. A. 1708).

"Iris dull red; feet tan-colour; bill dull red."

30. *Eclectus pectoralis salomonensis* Rothsch. & Hart.

Eclectus pectoralis salomonensis Rothsch. & Hart., *Nor. Zool.* 1901, p. 82 (various Solomon Islands, type from Fauro).

1 ♂, Rendova, February 1904 (No. A. 1375).

1 ♀, New Georgia, March 1904 (No. A. 1417).

2 ♂♂, Gizo, October, November 1903 (Nos. A. 654, 779).

4 ♂♂, 2 ♀♀, Bougainville, April, May 1904 (Nos. 1515, 1597, 1666, 1670, 1731, 1759).

31. *Geoffroyus heteroclitus* (Hombr. & Jacq.).

Psittacus Geoffroyi heteroclitus Hombr. & Jacq., *Ann. Soc. Nat. L.* ser. xvi. p. 319 (1841: "Saint Jorge et Isabel, Iles Salomon").

2 ♂♂, 1 ♀, Rendova, February 1904 (Nos. A. 1198, 1223, 1228).

3 ♂♂, New Georgia, March 1904 (Nos. A. 1401, 1405, 1413).

3 ♂♂, 1 ♀, Gizo, October, November 1903 (Nos. A. 619, 651, 767, 838).

2 ♂♂, 2 ♀♀, Choiseul, December 1903, January 1904 (Nos. A. 925, 1018, 1019, 1092).

3 ♂ ad., 1 ♀, 1 ♂ juv., Bougainville, April and May 1904 (Nos. A. 1516, 1613, 1707, 1727, 1741).

"Iris ivory white (dull whitish in young); feet greenish slate; bill black; upper mandible more or less yellow."

32. *Nasiterna aolae tristrami* Rothsch. & Hart.

Nasiterna tristrami Rothsch. & Hart., *Nor. Zool.* 1902, p. 589 (Kulambangra).

4 ♂♂, 4 ♀♀, Gizo, October and November 1903 (Nos. A. 611, 728, 804, 824, 847, 848, 852, 857).

1 ♂, 2 ♀♀, New Georgia, March 1904 (Nos. A. 1399, 1400, 1406).

1 ♂, 2 ♀♀, Rendova, February 1904 (Nos. A. 1259, 1260, 1383).

"Iris red (yellowish red); feet ashy blue (pale slate); bill blackish slate (slate)."

We know this form now from Kulambangra, Rendova, New Georgia, and Gizo.

33. *Nasiterna aolae nanina* Tristr.

Nasiterna nanina Tristram, *Ibis* 1891, p. 608 (Isabel). (Cf. *Nor. Zool.* 1901, p. 188, 1902, p. 589.)

5 ♂♂, 2 ♀♀, Choiseul, December 1903 (Nos. A. 865, 895, 1000, 1009, 1015, 1024, 1025).

3 ♂♂, Bougainville, April 1904 (Nos. A. 1478, 1677, 1756).

"Iris red (yellowish red, dull yellow); feet ashy blue; bill dark slate (black).

We know this form now from Isabel, Choiseul, and Bougainville.

34. *Cacatua ducorpsii* Jacq. & Puch.

Cacatua Ducorpsii Jacq. & Puch. *Voy. Pôle Sud, Zool.* iii p. 108 (1852: "Iles Salomon").

2 ♀♀, Rendova, February 1904 (Nos. A. 1306, 1352).

1 ♂, New Georgia, March 1904 (No. A. 1398).

2 ♂♂, Bougainville, May 1904 (Nos. A. 1761, 1778).

35. *Eurystomus solomonensis* Sharpe.

Eurystomus solomonensis Sharpe, *P. Z. S.* 1890, p. 552 (Ugi).

3 ♂♂, 3 ♀♀, New Georgia, March 1904 (Nos. A. 1410, 1425, 1433, 1445, 1446, 1447).

1 ♂, Bougainville, May 1904 (No. A. 1729).

The younger individuals have the upper mandible dark brown, but the adult ones quite red.

36. *Alcedo ispida salomonensis* subsp. nov.

The central group of the Solomon Islands, Gizo, Rendova, and presumably also New Georgia, are inhabited by a beautiful, very blue and brightly coloured race of Kingfishers, which differs from its nearest ally, *Alcedo ispida hispidoides*, as follows : The middle of the back and rump, as well as the tips to the feathers of the crown and hindneck, are purplish blue, instead of light or cobalt-blue; the cheek-stripe is very deep blue, not light blue; the feathers behind the eye bluish black; wing-coverts deep blue, with lighter, more purplish blue tips; the patches on the sides of the chest blue-black; the bill is usually higher. Type: ♂ ad., No. A. 1244, Rendova, 10. ii. 1904, A. S. Meek coll.

While the series from Rendova and Gizo is easily recognisable from the characters given above, the few skins from Guadalcanar and Treasury Islands, though certainly more blue and very much like the birds from Gizo and Rendova, are somewhat intermediate between *A. i. hispidoides* and *salomonensis*. The forms *A. i. bengalensis*, *floresiana*, and *hispidoides* have been discussed in former volumes of the Journal.

Mr. Meek sent the following specimens :

1 ♂ ad., 4 ♀ ad., 4 ♀ juv., Rendova, February 1904 (Nos. A. 1237, 1241, 1243, 1244, 1245, 1246, 1267, 1304, 1313).

1 ♂ ad., 1 ♀ ad., Gizo, October 1903 (Nos. A. 698, 699).

"Iris dark brown; feet yellowish red (red, burnt red, dull smoky red in some young); bill black in adult males, red at base in females."

Judging from a male from the Duke of York Island, collected by Th. Kleinschmidt, the birds from there belong also to *A. i. salomonensis*, or a closely allied form, but they certainly differ from *hispidoides*.

37. *Alcyone pusilla richardsi* Tristr.

Alcyone richardsi Tristram, *Ibis*, 1882. p. 134 pl. 4 (Rendova).

1 ♀, Gizo, 10. xi. 1903 (No. A. 812).

1 ♂, 2 ♀ ♀, Choiseul, December 1903, January 1904 (Nos. A. 903, 1090, 1153).

3 ♂ ♂, 2 ♀ ♀, Bougainville, March 1904 (Nos. A. 1589, 1629, 1644, 1667, 1675).

"Iris brown, feet smoky brown, bill black."

This little *Alcyone* can only be considered as a very closely allied subspecies of *A. pusilla*. The chief character relied upon by Tristram and Sharpe, *i.e.* the blue pectoral band, breaks down when a series is compared. While in none of our *richardsi* it is as complete as in Canon Tristram's figure, one *female* from Bougainville (No. A. 1629) has this band as completely absent as in typical *pusilla*. The only character which appears to be constant is the larger size of the bill. The different shades of blue noted in the original description are found in both subspecies.

38. *Ceyx meeki* Rothsch.

Ceyx meeki Rothschild, *Bull. B. O. C.* xi. p. 23 (1901: Isabel I.). (Cf. *Nor. Zool.* 1902. p. 587. pl. xi., fig. 1.)

4 ♂ ♂, 2 ♀ ♀, Choiseul, December 1903, January 1904 (Nos. A. 981, 1085, 1132, 1133, 1134, 1149).

2 ♂ ad., 4 ♀ ad., 1 ♂ juv., Bougainville, March 1904. (Nos. A. 1159, 1484, 1498, 1641, 1655, 1690, 1774).

"Iris dark brown; feet pale yellow flesh-colour, mottled brown and flesh, smoky brown; bill black in both sexes."

39. *Ceyx lepida collectoris* Rothsch. & Hart.

C. lepida collectoris R. & H., *Nov. Zool.* 1901 p. 376 (Kulambangra and Guadalcanar, errore!)

We restrict this name to the birds from the central group!

3 ♂♂, 3 ♀♀, Rendova, February 1904 (Nos. A. 1248, 1249, 1303, 1377, 1387, 1388).

3 ♂♂, 3 ♀♀, New Georgia, March 1904 (Nos. A. 1428, 1429, 1450, 1456, 1459, 1470).

"Iris brown, feet and bill red (orange red, chinese red)," in both sexes!

The Guadalcanar form differs from *C. l. collectoris* by the black upper mandible and smaller size! Wings, 60 and 61 mm. only; bill (culmen), 33 to 36, but about 3 mm. longer and much thicker in *collectoris*. We call the Guadalcanar form:

Ceyx lepida nigromaxilla subsp. nov.

(Type ♀, Guadalcanar, 18. iv. 1901. No. 2925.)

40. *Halcyon bougainvillei* Rothsch.

(Plate X.)

Halcyon bougainvillei Rothschild, *Bull. B. O. C.* xv. p. 5 (1904: Bougainville).

This remarkable large kingfisher has no near ally, as far as we know at present. The sexes differ conspicuously, the *female* differing from the *male* in having the scapulars and interscapular feathers cinnamon-olive-brown with a green tinge, instead of blue. The plate shows the coloration of both sexes. The wing measures 130, the tail 93, bill 47 to 50, metatarsus 21 to 22 mm. The *female* is of the same size.

Mr. Meek sent four specimens.

3 ♂♂, 1 ♀, Bougainville, May 1904 (Nos. 1753, 1762, 1766, 1770).

(Type No. 1770 ♂ ad.)

41. *Halcyon tristrami alberti* subsp. nov.

Subspeciei *Halcyon tristrami tristrami* dictae similis, sed uropygio saturatiore, caerulecentiore, rostro aliquanto brevius distinguenda.

We have compared 30 specimens from the Solomon Islands with the two types, kindly lent to us from the Liverpool Museum, and two specimens in the British Museum. We find that the former are generally darker above, especially the crown of the head is nearly always darker, the rump much more blue, the tail somewhat bluer, the upperside generally darker. The bill is shorter, generally from 3 to 15 mm., sometimes only 2 mm. Type No. 2780, Kulambangra, 21. ii. 1901, ♂, A. S. Meek coll.

H. tristrami, "Ibis," 1880, p. 460, pl. xv., was originally described as doubtfully from Makira Harbour, Solomon Islands. The description, however, does not agree with the form now known from San Christoval, *i.e.* Sharpe's *H. solomonensis*, and the figure is also certainly that of a *H. tristrami*. In the Tristram collection, now in the Liverpool Museum, two specimens from Blanche Bay, New Brittany,

are marked as the types of *H. tristrami*. Evidently Mr. Layard wrote from memory, and his doubtful locality "Makira Harbour" was an error. Mr. Meek sent the following specimens of *H. t. alberti*:

2 ♂, 2 ♀ ad., 2 ♂ jun., Rendova, February 1904 (Nos. A. 1171, 1189, 1261, 1272, 1273, 1286).

1 ♂, 1 ♀ ad., 1 ♂ jun., Gizo, October, November 1903 (Nos. A. 612, 659, 822).

1 ♂ ad., Bougainville, May 1904 (No. A. 1768).

"Iris brown. Bill black, base of under mandible whitish; feet dark slate."

42. *Halcyon sanctus* Vig. & Horsf.

Halcyon sanctus Vig. & Horsfield, *Trans. Linn. Soc. Lond.* xv. p. 206 (1823: Australia).

4 ♂♂, 1 ♀, Rendova, February 1904 (Nos. A. 1175, 1374, 1376, 1389, 1390).

2 ♂♂, 1 ♀, New Georgia, March 1904 (Nos. A. 1418, 1423, 1424).

4 ♂♂, 2 ♀♀, Bougainville, April 1904 (Nos. A. 1486, 1503, 1528, 1536, 1540, 1557).

43. *Halcyon leucopygius* (Verr.).

Cyanolegon leucopygius Verreaux, *Rev. & Mag. de Zool.* 1858, p. 358 (Solomon Islands).

3 ♂♂, 3 ♀♀, Choiseul, December 1903, January 1904 (Nos. A. 859, 861, 955, 961, 1014, 1161).

1 ♂, 2 ♀♀, Bougainville, May 1904 (Nos. A. 1725, 1747, 1776).

"Iris brown; bill and feet black."

44. *Halcyon saurophaga* Gould.

Halcyon saurophaga Gould, *P. Z. S.* 1843, p. 103 (New Guinea).

3 ♂♂, 1 ♀, Gizo, November 1903 (Nos. A. 781, 788, 810, 837).

2 ♀♀, Choiseul, January 1904 (Nos. A. 1095, 1130).

1 ♂, Bougainville, May 1904 (No. A. 1712).

"Iris brown; feet dark slate; bill black, basal half of lower mandible whitish."

45. *Centropus albidiventris* Rothschild.

Centropus albidiventris Rothschild, *Bull. B. O. C.* xiv. p. 59 (March 1904: Gizo).

2 ♂ ad., 1 ♀ juv., Rendova, February 1904 (Nos. A. 1315, 1326, 1334).

2 ♂ ad., Gizo, October, November 1903 (Nos. A. 643, 729).

♂ ad. Head, neck, back, rump and under surface buff, the lower back, rump and underside more whitish, the feathers of the rump with dull black bases. Wings and tail purplish blue-black. Thighs buff, a blackish patch near the heel-joint. Iris red, bare spot round eye black in the skin, feet slate. Wing 270-80 mm. (not 70, as said by error in the original description, *l.c.*), tail about 340 mm. The young birds resemble those of *C. molle*, but the bars on the rectrices are wider.

46. *Eudynamis orientalis* subsp. nov.?

1 ♂, Gizo, 31. x. 1903 (No. A. 696).

2 ♂♂, Choiseul, December 1903 (Nos. A. 886, 1041).

"Iris bright dark red (rose-madder); feet slate-colour; bill greenish slate-colour."

These birds appear to be, from the colour of their plumage, perfectly adult, but two are in moult. They are like *E. orientalis rufirenter*, but apparently a little smaller. It is not probable that they can be united with *E. o. rufirenter*, since on New Ireland and New Britain we find a form larger than *rufirenter*. It will be best to await more material from the Solomon Islands, including females!

47. *Urodynamis taitensis* Sparrm.

Cuculus taitensis Sparrmin, *Mus. Carlson*, ii, pl. 32 (1787: no locality given, but we may accept Tahiti as the original locality, judging from the specific name).

1 ♀, Rendova, 20. ii. 1904 (No. A. 1342).

"Iris light brown; feet slate; bill horn-colour."

The specific name is wrongly quoted "*taitiensis*" in *Cat. B. Brit. Mus.* xix, p. 314.

48. *Cuculus saturatus* Blyth.

Cuculus saturatus Blyth, *Journ. As. Soc. Bengal*, xii, p. 942 (1843: ex Hodgson MS.: India). (*Cuculus intermedius* of the *Cat. B.* xix.)

1 ♂, 3 ♀ ♀, New Georgia, 12, 13, 14. iii. 1904 (Nos. A. 1434, 1440, 1464, 1466, 1468).

49. *Cacomantis addendus* Rothschild & Hart.

Cacomantis addendus Rothschild & Hartert, *Nov. Zool.* 1901, p. 185 (Kulambangra).

5 ♂ ♂, 1 ♀, New Georgia, March 1904 (Nos. A. 1422, 1437, 1438, 1439, 1462, 1467).

"Iris ♂ light brown (reddish brown, dull red), ♀ dull red; feet lemon-yellow; bill black and horn-colour."

These birds agree with the types from Kulambangra. The female is smaller (wing 112 mm.) than the male, and the rufous-cinnamon colour of the underside reaches upwards to the upper throat, which is only slightly mixed with creamy buff. The males have the chin and upper throat ashy for about one to two centimetres. The wings of the males measure 119 to 122 mm.

50. *Chalcococcyx plagosus* (Lath.).

Cuculus plagosus Latham, *Ind. Ord. Suppl.* p. xxxi (1801: "New Holland").

1 ♂, Bougainville, 18. iv. 1904 (No. A. 1575).

51. *Rhyticeros plicatus* (Forst.).

Buceros plicatus Forster, *Indische Zool.* p. 40 (1781: ex Dampier: Ceram).

1 ♂ ad., Bougainville Island, 2. v. 1904 (No. A. 1716).

"Iris smoky white; feet black; bill of a creamy white bone-colour, base dark red."

52. *Podargus inexpectatus* Hart. (? subsp.)

Podargus inexpectatus Hartert, *Bull. B. O. C.* xii, p. 24 (Nov. 1901—Isabel Island); *Nov. Zool.* 1902, p. 585.

3 ♀ ♀, Choisenl, 12. xii. 1903 and January 1904 (Nos. A. 929, 1127, 1141).

1 ♀, Bougainville, April 1904 (No. A. 1676).

These specimens agree perfectly with the single female from Isabel (l.c.), except that the wings are smaller, measuring only 198 to 207 mm., while that of the female from Isabel has the wing 220 mm. long. It is therefore possible that these are subspecifically separable, but the question cannot be decided until more females from Isabel are available.

53. *Eurostopus nigripennis* Rams.

Eurostopus nigripennis Ramsay, *Proc. Linn. Soc. N. S. Wales* vi. p. 843 (Rubiana).

1 ♀, Rendova, February 1904 (No. A. 1339).

2 ♂♂, 2 ♀♀, Gizo, November 1903 (Nos. A. 743, 744, 780, 856).

1 ♂, 2 ♀♀, Bougainville, April 1904 (Nos. A. 1649, 1684, 1685).

The sexes are practically alike, the female only having a slightly shorter wing; but some examples of both sexes have not only a large white spot on the inner web of the second, but also a small rusty white one on the inner edge of the first primary, while in others the first two primaries are spotless. Younger individuals have the white patches on the primaries more or less tinged with rusty brown. Probably subspecies of *E. albobularis*.

54. *Macropteryx mystacea woodfordiana* Hart.

Macropteryx mystacea woodfordiana Hartert, *Nor. Zool.* 1896. p. 19 (Guadalupe Isl. nd).

1 ♀ ad., Rendova, 6. ii. 1904 (No. A. 1201).

5 ♀♀, New Georgia, March 1904 (Nos. A. 1394, 1395, 1402, 1403, 1419).

2 ♂♂, 4 ♀♀, Choiseul, December 1903 (Nos. A. 908, 972, 1042, 1043, 1061, 1081).

2 ♂♂, 2 ♀♀, Bougainville, April and May 1904 (Nos. A. 1703, 1709, 1710, 1720).

55. *Collocalia esculenta* (L.).

Hirundo esculenta Linnaeus, *Syst. Nat.* ed. x. p. 191 (1758: ex Bontius, Ray, Rumphius, Olearius).

"Hab. in China"—errore! I accept Amboina as the loc. typ.).

2 ♀♀, 1 ♂ juv., 3 doubtful, Choiseul, January 1904 (Nos. 1093, 1096, 1097, 1098, 1115, 1116).

Clutches of two eggs each were taken on Choiseul on January 10th. The eggs measure 18 × 11 and 17.8 × 11.6 mm.

56. *Pitta anerythra anerythra* Rothschild.

Pitta anerythra Rothschild, *Bull. B. O. C.* xii. p. 22 (1901: Isabel).

3 ♂♂, 3 ♀♀, Choiseul, December 1903, January 1904 (Nos. A. 992, 1021, 1102, 1147, 1154, 1160).

These specimens agree perfectly with our series from Isabel. Cf. *Nor. Zool.* 1902, p. 584, pl. xi. fig. 2.

57. *Pitta anerythra pallida* Rothschild.

Pitta anerythra Rothschild, *Bull. B. O. C.* xv. p. 7 (Oct. 1904—Bougainville).

6 ♂♂, 4 ♀♀, Bougainville, April and May 1904 (Nos. A. 1495, 1523, 1570, 1579, 1580, 1655, 1664, 1765, 1769, 1775).

"Iris brown; feet smoky horn-colour; bill black."

This very interesting subspecies differs from *P. a. anerythra* of Isabel and Choiseul in being paler on the underside, and in having the crown of the head much blacker, the chestnut colour being more restricted and sometimes even absent. The amount of chestnut varies, however, much, as sometimes there is as much as in some specimens from Choiseul and Isabel, where, however, all examples have a great amount of chestnut, and mostly much more than those from Bougainville.

An egg was found on Bougainville in May. It is a typical *Pitta*-egg, being creamy white, marked all over with short lines and scribbings of brownish red and with some underlying greyish mauve spots. It measures 30.8 by 25 mm.

58. *Hirundo tahitica* Gm.

Hirundo tahitica Gmelin, *Syst. Nat.* i. p. 1016 (1788: ex Latham. hab. Tahiti).

2 ♂♂, 4 ♀♀, Bougainville, April and May 1904 (Nos. A. 1542, 1701, 1724, 1737, 1738, 1752).

59. *Rhipidura tricolor* (Vieill.).

Massicapa tricolor Vieillot, *Nouv. Dict. d'Hist. Nat.* xxi. p. 430 (1878—Timor! errore! We have substituted Amboina as the original locality. Cf. *Nov. Zool.* 1902, p. 583).

2 ♂♂, 4 ♀♀. Rendova, February 1904 (Nos. A. 1172, 1218, 1277, 1316, 1340, 1370).

2 ♂♂, 2 ♀♀, Gizo, October and November 1903 (Nos. A. 635, 701, 787, 823).

1 ♀, Choiseul, January 1904 (No. A. 1129).

3 ♂♂, 3 ♀♀, Bougainville, April 1904 (Nos. A. 1524, 1574, 1617, 1618, 1646, 1695).

60. *Rhipidura albina* Rothsch. & Hart.

Rhipidura albina Rothschild & Hartert, *Nov. Zool.* 1901. p. 183 (Kulambangra).

2 ♂♂, 1 ♀ ad., Rendova, February 1904 (Nos. A. 1279, 1290, 1300). "Iris dark brown; bill and feet black."

These three specimens agree with the description of our single type from Kulambangra. The type-specimen had some white feathers, irregularly spread over the head and throat; and our statement that they were aberrational leucocistic feathers proves to be correct, for our three new specimens do not show them. They have, on the other hand, a narrow white shaft-stripe near the tip of the outer rectrices, distinct in two, barely indicated in the third. The wings of the males measure 88 and 90, that of the female 85 mm. Otherwise the sexes are alike. The type was probably an exceptionally large specimen, having a wing of 98 mm. This rare species is not a member of the *tricolor* group, but may possibly be a representative of *Rh. cockerelli*.

61. *Rhipidura cockerelli* (Rams.).

Sauloprocta cockerelli Ramsay, *Proc. Linn. Soc. N. S. Wales* iv. p. 81 (1880: Guadalcanar).

2 ♂♂, 4 ♀♀, Choiseul, December 1903 (Nos. A. 876, 883, 919, 956, 973, 1063).

2 ♂♂, 3 ♀♀, Bougainville, April—May 1904 (Nos. A. 1513, 1635, 1636, 1679, 1704).

These specimens agree in everything with those from Guadalcanar and Isabel. The size of the bill is somewhat variable, but not according to localities.

62. *Rhipidura rubrofrontata* Rams.

Rhipidura rubrofrontata Ramsay, *Proc. Linn. Soc. N. S. Wales* iv. p. 82 (1880: Guadalcanar).

7 ♂♂, 1 ♀ (albinoistic var.), Rendova, February 1904 (Nos. A. 1168, 1204, 1251, 1350, 1359, 1381, 1382, 1385).

3 ♂♂, 3 ♀♀, Gizo, November 1903 (Nos. A. 809, 819, 829, 841, 843, 854).

2 ♀♀, Choiseul, December 1903, January 1904 (Nos. A. 923, 1120).

2 ♂♂, 4 ♀♀, Bougainville, April and May 1904 (Nos. A. 1508, 1593, 1631, 1661, 1732, 1760).

The specimens from Bougainville and Choiseul are apparently slightly smaller, and the cinnamon-red colour of the rump extends perhaps a little more towards the head. Nearly all the specimens are, however, moulting, and it is, therefore, difficult to say whether these apparent differences are of much importance. Moreover, we have no specimens from the original locality (Guadalcanar) to compare.

No. A. 1204 from Rendova is a somewhat peculiar aberration. The upper surface is white, with the exception of the cinnamon-red forehead, a few brown feathers on the crown and nape, some few of the upper wing-coverts, and a few of the upper tail-coverts. The wings are partly brown, partly white, two of the primaries on each side and the majority of the secondaries being of the latter colour. The tail is of the normal colour. The under surface is pure white, with the exception of two brown feathers on the throat and the pale cinnamon under tail-coverts. The specimen is not an albino, the iris being brown and not pink, the feet brown, the bill brownish black.

63. *Myiagra ferrocyanea ferrocyanea* Rams.

Myiagra ferrocyanea Ramsay, *Proc. Linn. Soc. N. S. Wales* iv. p. 80 (1879—Guadalcanar).

3 ♂♂, 3 ♀♀, Choiseul, December 1903 (Nos. A. 898, 927, 1022, 1023, 1065, 1079).

2 ♂♂, 2 ♀♀, Bougainville, April 1904 (Nos. A. 1522, 1537, 1630, 1678).

♂♀. "Iris (dark) brown; feet black (very dark slate); bill chalky blue."

The male has the throat black, upper wing- and tail-coverts purplish blue. The female has the crown and hind-neck grey, back rusty brown, central rectrices cinnamon-brown, the rest bright cinnamon, the quills edged with bright cinnamon. Underside white, the abdomen with a light rusty-buff tinge.

We have now specimens from Guadalcanar, Florida, Isabel, Treasury, Choiseul, Bougainville, and Munia in the Shortland group.

64. *Myiagra ferrocyanea feminina* Rothsch. & Hart.

Myiagra feminina Rothsch. & Hartert, *Nor. Zool.* 1901. p. 183 (Kulambangra).

4 ♂♂, 2 ♀♀, Rendova, February 1904 (Nos. A. 1167, 1310, 1338, 1347, 1360, 1367).

3 ♂ ad., 1 ♂ juv., 5 ♀♀, Gizo, October and November 1903 (Nos. A. 629, 632, 656, 745, 747, 753, 779, 786, 832).

The male differs from that of *M. f. ferrocyanea* in being uniform blue-black with a steely gloss, but without any purplish tinge. The female has the head above bluish grey, the rest of the upper surface grey with an ashy-brownish tinge, the under surface white from chin to tail.

♂♀. "Iris brown; feet (dark) slate; bill chalky blue."

65. *Monarcha kulambangrae meeki* subsp. nov

Differs from *M. k. kulambangrae* in having less white in the tail. The outer rectrices, which are white for 23 (♀) to 29 (♂) mm. in *M. k. kulambangrae*, are white only for 11 and 18 (♀) to 17 and 21.5 (♂) mm. in *M. k. meeki*. Otherwise there is no appreciable difference.

The nomenclature here employed is only provisional. Probably *kulambangrae* and *meeki* are subspecies of the group of *M. brodiei*, and the oldest specific name of this group of subspecies may not even be *brodiei*. We hope to discuss these flycatchers later.

(Type of *M. k. meeki*: ♂ ad., Rendova, 23. ii. 1904. No. A. 1355, A. S. Meek coll.)

The differences of *kulambangrae* and *brodiei* are fully stated in the original description (*Nor. Zool.* 1901. p. 183).

Mr. Meek sent the following specimens from Rendova :

3 ♂♂, 2 ♀ ad., 1 ♀ juv., Rendova, February 1904 (Nos. A. 1202, 1210, 1282, 1289, 1355, 1356, 1369).

"Iris brown ; feet bluish slate ; bill chalky blue."

66. *Monarcha brodiei* Rams.

Monarcha brodiei Ramsay, *Proc. Linn. Soc. N. S. Wales* iv. p. 80 (1879 : Guadalcanar).

4 ♂ ad., 1 ♂ juv., 2 ♀ juv., Choiseul, December 1903, January 1904 (Nos. A. 880, 942, 1062, 1099, 1101, 1106, 1131).

2 ♂ ad., 2 ♀ ad., 1 ♂ juv., 1 ♀ juv., Bougainville, April and May 1904 (Nos. A. 1488, 1497, 1512, 1543, 1693, 1746).

There is some variation in the extent of the white tips to the outer rectrices. Generally this is smallest in the specimens from Guadalcanar, and those from Isabel are indistinguishable from the latter ; while specimens from Choiseul are inclined to have more white, and most of those from Bougainville have distinctly more white on the outer rectrices. This difference is, however, not nearly so constant and marked as it is in *kulambangrae* and *meeki*, and we are, therefore, not inclined to separate the forms from the northern islands without further evidence.

The form we called *M. brodiei floridana* (*Nor. Zool.* 1901. p. 183), which has white edges to the primary coverts and some of the inner secondaries, is evidently quite distinct, and hitherto only known to us from our two males from Florida Island.

67. *Monarcha castaneiventris castaneiventris* Verr.

Monarcha castaneiventris Verreaux. *Rev. & Mag. de Zool.* 1858. p. 304 ("Samoa"—error ! Doubtless the type came from the Solomon Islands).

3 ♂ ad., 1 ♂ juv., 2 ♀ juv., Choiseul, December 1903, January 1904 (Nos. A. 873, 962, 1013, 1026, 1057, 1136).

"Iris (♂ ad.) brown ; feet and bill dark slate-colour."

One of the young females has the upper mandible abnormally lengthened and hooked.

68. *Monarcha castaneiventris erythrosticta* (Sharpe).

Pomarea erythrosticta Sharpe, *P. Z. S.* 1888, p. 185 (Fauro).

Pomarea ribbei Hartert, *Nov. Zool.* 1895, p. 485 (Munia).

Two of our specimens, "Male ?" No. A. 1694, and "Female" No. A. 1476, have a pale cinnamon patch in front of the eye, like Sharpe's type of *erythrosticta*, the others a white one, like Hartert's type of *ribbei*. We have therefore no doubt that the two supposed species belong to one and the same form. They are evidently a northern representative of *castaneiventris*.

3 ♂ ad., 1 ♀, 2 ♂ ? Bongainville, April 1904 (Nos. A. 1476, 1499, 1554, 1582, 1692, 1694).

Nos. A. 1499 and A. 1554, marked as males, have a much darker and less bright abdomen. In the latter specimen the bill is abnormally crossed, like the bill of a *Loxia*.

"Iris brown ; feet slate ; bill slate-blue with black tip."

69. *Monarcha richardsii* (Rams.)

Piezorhynchus Richardsii Ramsay, *Proc. Linn. Soc. N. S. Wales* vi, p. 177 (1882 : "Ugi").

Piezorhynchus florenciae Sharpe, *Ibis* 1890, p. 206 (Rubiana = New Georgia).

3 ♂ ad., 1 ♂ juv. ? (marked ♀), 1 ♀ ad., 1 ♀ juv., Rendova, February 1904 (Nos. A. 1163, 1165, 1170, 1239, 1278, 1305).

4 ♂ ad., 2 ♂ juv. ? (marked ♀), 1 very young male, 1 ♀ juv., Gizo, October and November 1903 (Nos. A. 604, 616, 622, 634, 650, 738, 784, 839).

The adult males agree perfectly with Dr. Ramsay's description, though it would be desirable to compare a series from Ugi, where the type has been said to come from. What we take to be adult females are as follows : Whole upper surface slaty grey, wings and tail darker, throat and chest paler, lower breast, abdomen and under tail bright chestnut. These birds are the females of Sharpe's *florenciae*. The immature females have the throat and chest washed with light chestnut. The immature males are like the female, but head, throat and ear-coverts are more or less blackish slate, a wide line behind the eyes and a patch on the sides of the neck, and a partial ring around the eyes white. These immature males are the males of Sharpe's *florenciae*. One of our three young males from Gizo (No. A. 738) has the throat white, but this is clearly albinistic.

"Iris dark brown ; feet slate-colour ; bill chalky blue."

70. *Monarcha inornata* (Garnot).

Muscicapa inornata Garnot, *Voy. "Coquille," Zool. Atl.* pl. xvi, fig. 2 (1826), i. 2 p. 591 (1828 : New Guinea).

1 ♂ 1 ♀ juv., Choiseul, 30. xii. 1903 (Nos. A. 1074, 1075).

A series of adult specimens from the Solomon Islands alone can prove whether these examples are typical *inornata*, or belong to a distinct race.

71. *Graucalus welchmani* subsp. ?

Graucalus welchmani Tristram, *Ibis* 1892, p. 294 (Bugotu = Isabel).

3 ♂ ad., Bongainville, April 1904 (Nos. A. 1531, 1556, 1602).

"Iris dark brown ; bill and feet black."

These three males differ conspicuously from our two males from Kulambangra

in having the black of the throat extending to the chest, and by shorter and stouter bills. We suspect that these birds are the males of true *welchmani*, the type of which is a female in spite of having been described as a male, and that the Kulambangra form will have to be separated. Males from Isabel only can finally settle the question.

72. *Graucalus hypoleucus elegans* Rams.

[*Graucalus hypoleucus* Gould, *P. Z. S.* 1848, p. 38 (Port Essington, Australia).]

Graucalus elegans Ramsay, *Proc. Linn. Soc. N. S. Wales* vii. p. 22 (1882 : Guadalcanar). (Cf. *Nov. Zool.* 1902, p. 582.)

3 ♂ ad., 1 ♀, New Georgia, March 1904 (Nos. A. 1408, 1412, 1415, 1442).

1 ♀, Gizo, 29. x. 1903 (No. A. 670).

3 ♂♂, Choiseul, December 1903 (Nos. A. 909, 979, 1050).

3 ♂♂, 3 ♀♀, Bongainville, April and May 1904 (Nos. A. 1525, 1638, 1702, 1706, 1739, 1751).

"Iris brown; bill and feet black."

73. *Graucalus pusillus ombriosus* subsp. nov.

This form is the one inhabiting the western central group of the Solomon Islands, namely New Georgia, Rendova, Gizo, and Kulambangra. It differs from *G. p. pusillus* by being more sooty on the upper surface, not so light grey.

Type ♂ ad., Gizo, No. A. 695. We have the following specimens:—

1 ♂, Rubiana (=New Georgia), collected in 1894 by Captains Webster and Cotton (from spirits).

2 ♂ ad., 2 ♂ jun., 2 ♀♀, Kulambangra, February and March 1901, collected by A. S. Meek (Nos. 2775, 2789, 2794, 2798, 2821, 2822). These are the birds quoted as *G. pusillus*, *Nov. Zool.* 1901, p. 180.

2 ♂ ad., 2 ♂ imm., 2 ♀♀, Rendova, March 1904 (Nos. A. 1190, 1263, 1264, 1280, 1317, 1349).

3 ♂♂, 2 ♀♀, Gizo, October 1903 (Nos. A. 605, 607, 669, 677, 695).

"Iris bright yellow; bill and feet black."

74. *Graucalus pusillus nigrifrons* Tristr.

[*Graucalus pusillus* Ramsay, *Proc. Linn. Soc. N. S. Wales* iv. p. 71 (1879 : Guadalcanar).]

Graucalus nigrifrons Tristram, *Ibis*, 1892, p. 294 (Bugotu—Isabel). Cf. *Nov. Zool.* 1902, p. 582, where, however, the differences between the two forms have been accidentally inverted. In fact, *nigrifrons* is barely separable, differing in no other way from *G. p. pusillus*, than being slightly paler grey.

1 ♂, 1 ♀, Choiseul, 22. xii. 1903, 7. i. 1904 (Nos. A. 1005, 1112).

2 ♂ ad., 1 ♂ jun., 1 ♀, Bongainville, April 1904 (Nos. 1604, 1622, 1650, 1652).

"Iris bright yellow; bill and feet black."

75. *Edolisoma erythropygium saturatus* Rothsch. & Hart.

Edolisoma erythropygium saturatus Rothschild and Hartert, *Nov. Zool.* 1902, p. 582 (Isabel [type], Kulambangra and Shortland Islands).

1 ♂ imm. 1 ♂ juv., 4 ♀♀, Rendova, February 1904 (Nos. A. 1183, 1291, 1293, 1309, 1320, 1332).

4 ♂ ad., 1 ♂ juv., 1 ♀, Gizo, October and November 1903 (Nos. A. 671, 678, 690, 712, 714, 758).

2 ♂ ad., 2 ♂ juv., 1 ♂ juv., 1 ♀, Choiseul, December 1903 (Nos. A. 870, 888, 893, 945, 982, 1004).

4 ♂ ad., 1 ♀ ad., 1 ♀ juv., Bongainville, April and May 1904 (Nos. A. 1514, 1566, 1594, 1625, 1681, 1705).

"Iris brown; feet dark slate; bill black."

Fully adult males have the throat more or less black, which is not the case in *E. c. erythropygiam*. The size of the bill is somewhat variable.

76. *Edoliisoma holopolius* (Sharpe).

Granulus holopolius Sharpe, *P. Z. S.* 1888, p. 184 (Guadalcanar). (Cf. *Nor. Zool.* 1901, p. 374.)

3 ♂ ad., Choiseul, December 1903 (Nos. A. 937, 968, 1017).

4 ♂ ad., 3 ♀ ad., Bongainville, April and May 1904 (Nos. A. 1481, 1520, 1640, 1648, 1682, 1722, 1723).

"Iris brown; bill and feet black."

77. *Geocichla papuensis* Seeb. (? subsp. nov.)

Geocichla papuensis Seeböhm, *Cat. B. Brit. Mus.* v. p. 158, pl. ix. (1881: "S.E. New Guinea").

1 ♀, immat., Choiseul, 13. i. 1904 (No. A. 1148).

"Iris dark brown; feet light horn-colour; bill blackish, base of lower mandible pale."

This single specimen is immature and moulting, and therefore we do not venture to separate it from *G. papuensis*, though the bill is 2 mm. longer than in our two specimens of the latter, and the rump is apparently darker.

78. *Pachycephala astrolabi* Bp.

Pachycephala astrolabi Bonaparte, *Comp. Ar.* i. p. 329 (1850: ex Hombr. & Jacq., *Voy. Pôle Sud*, pl. v. fig. 3, hab. "San Jorge").

5 ♂ ♂, 1 ♀, Rendova, February and March 1904 (Nos. A. 1193, 1213, 1232, 1233, 1262, 1471).

4 ♂ ♂, 2 ♀ ♀, Choiseul, December 1903, January 1904 (Nos. A. 868, 932, 936, 947, 969, 1087).

3 ♂ ad., 2 ♂ juv., 2 ♀ ♀, Bougainville, March 1904 (Nos. A. 1479, 1500, 1521, 1544, 1545, 1553, 1564).

In addition to the variations of females and immature birds described in *Nor. Zool.* 1901, p. 375, we must mention the following two females:—

"♀," No. A. 1479, Bougainville: Throat, sides of neck, breast and sides of abdomen cinnamon-rufous, forehead, and outer aspect of wings ochraceous-rufous, centre of abdomen and vent buff.

"♀," No. A. 936, Choiseul: Upper surface bright olive, whole under surface golden yellow; wings fuscous with rufous edges.

79. *Zosterops rendovae* Tristr.

Zosterops rendovae Tristram, *Ibis*, 1882, p. 135 (Rendova).

Differs from *Z. kulambangrae* (*Nor. Zool.* 1901, p. 180) in having no white orbital ring and no such black loreal spot.

Dr. Finsch (*Tierreich Lief.* xv. p. 26) unites with *Z. rendovae* Dr. Ramsay's *Z. agiensis*! Seeing that such closely neighbouring islands as Kulambangra and Rendova have different forms, one is not justified in accepting such a view.

7 ♂♂, 2 ♀♀, Rendova, February 1904 (Nos. A. 1191, 1203, 1220, 1240, 1256, 1257, 1295, 1296, 1312).

"Iris dull red (hazel, bright chocolate); feet straw-yellow; bill black."

80. *Zosterops luteirostris* Hart.

Zosterops luteirostris Hartert, *Bull. B.O.C.*, March 1904 (Gizo).

5 ♂♂, 5 ♀♀, Gizo, October and November 1903 (Nos. A. 606, 631, 633, 724, 748, 761, 795, 803, 840, 855).

"Iris dark red (plum-red); feet straw-yellow; bill dark straw-yellow."

81. *Zosterops metcalfei* Tristr.

Zosterops metcalfei Tristram, *Ibis*, 1894, p. 29, pl. iii. (Bugotu - Isabel). (Cf. *Nov. Zool.*, 1902, p. 581.)

2 ♂♂, 3 ♀♀, Choiseul, December 1903 (Nos. A. 864, 935, 952, 985, 1030).

3 ♂♂, 3 ♀♀, Bougainville, April 1904 (Nos. A. 1494, 1596, 1614, 1615, 1628, 1657).

"Iris chocolate-brown; feet slate; bill black and horn-colour."

82. *Myzomela eichhorni* Rothschild & Hart.

Myzomela eichhorni Rothschild & Hartert, *Nov. Zool.*, 1901, p. 181 (Kulambangra); *Nov. Zool.*, 1902, pl. VII. figs. 1, 2.

We have now received a number of adult females. They are much smaller than the males (wing about 62 mm.), the crown is much lighter, not blackish, the rump olive with a rusty tinge, but not red. The young resemble the females, but the males are larger, and the red on the rump appears at the first moult.

3 ♂♂, 3 ♀♀, 2 ♂ juv., Rendova, February 1904 (Nos. A. 1164, 1208, 1211, 1217, 1221, 1229, 1242, 1292).

4 ♂♂, New Georgia, March 1904 (Nos. A. 1407, 1453, 1463, 1465).

4 ♂ ad., 5 ♀ ad., 1 ♂ juv., Gizo, August 1901, October and November 1903 (Nos. 3539, 3540, A. 702, 708, 722, 752, 763, 799, 800, 834).

"Iris brown; feet slate; bill black."

The birds from Gizo are rather smaller than those from Kulambangra, Rendova, and New Georgia.

83. *Myzomela lafargei* Jacq. & Puch.

Myzomela lafargei Jacq. & Puch., *Voy. Pôle Sud, Zool., Ois.*, p. 98 (1853—Solomon Islands).

The female differs considerably from the male. It is above very dark olive, not black; the crown like the back, not red; the throat olive-brown, instead of black; breast and abdomen duller.

4 ♂ ad., 1 ♀, 3 ♂ juv., Choiseul, December 1903, January 1904 (Nos. A. 904, 921, 988, 1051, 1054, 1117, 1143, 1145).

3 ♂ ad., 2 ♀♀, 2 ♂ juv., Bougainville, April and May 1904 (Nos. A. 1496, 1511, 1584, 1585, 1586, 1587, 1713).

84. *Dicaeum aeneum* Jacq. & Puch.

Dicaeum aeneum, Jacq. et Pucheran, *Voy. Pôle Sud, Zool., Ois.*, p. 97 (1583: "San Jorge").

4 ♂♂, 3 ♀♀, Choiseul, December 1903, January 1904 (Nos. A. 890, 894, 896, 897, 1007, 1033, 1144).

6 ♂♂, Bougainville, April 1904 (Nos. A. 1477, 1581, 1643, 1651, 1668, 1683).

85. *Cinnyris frenata* (S. Müll.).

Nectarinia frenata S. Müller, *Land- en Volkskunde*, p. 173 ("Door ons an de westkust van Nieuw-Guinea ontdekt").

In *Nor. Zool.* 1903, p. 213, we came to the conclusion that the form from New Ireland and Solomon Islands could not be separated from the typical New Guinea form. We are, however, not quite certain if the Moluccan form, which is less bright yellow below and not so bright above, might not be separable, and there is also no doubt that *all* our Solomon Islands are extremely bright in colour. Perhaps the examination of a series of very fresh skins might after all justify Dr. Heinroth's "*C. frenata flava*," but more likely necessitate the creation of another Moluccan race.

Mr. Meek sent the following fresh series :

3 ♂♂, 3 ♀♀, Rendova, February 1904 (Nos. A. 1178, 1219, 1225, 1251, 1373, 1373A).

5 ♂♂, 1 ♀, Gizo, October, November 1903 (Nos. A. 691, 709, 726, 741, 754, 765).

2 ♂♂, 2 ♀♀, Choiseul, December 1903, January 1904 (Nos. A. 1071, 1072, 1073, 1121).

3 ♂♂, 2 ♀♀, 1 ♂ juv., Bougainville, April 1904 (Nos. 1492, 1534, 1538, 1547, 1558, 1561).

86. *Calornis cantoroides* Gray.

? *Lamprotornis cantor* S. Müller, *Verh. Nat. Gesch. Nedrl. overg. bez., Land- en Volkskunde*, p. 22 (1844—descr. nulla, errore, non *Turdus cantor* Gm.!).

Calornis cantoroides Gray, *P. Z. S.* 1861, pp. 431, 436 (Mysol).

3 ♂♂, 1 ♀, Gizo, November 1903 (Nos. A. 710, 742, 782, 783).

4 ♂♂, 1 ♀, Choiseul, December 1903 (Nos. A. 902, 991, 1068, 1069, 1080).

2 ♀ juv., Bougainville, April 1904 (Nos. A. 1552, 1578).

87. *Calornis metallica* (Temm.).

Lamprotornis metallica Temminck, *Pl. Cal.* 266 (1824: "Timor et Celebes," errore! We have to accept Amboina as the typ. loc. Cf. Salvad., *Orn. Pap.* ii. p. 447).

2 ♂♂ juv., 3 ♀♀, Rendova, February 1904 (Nos. A. 1173, 1176, 1285, 1299, 1322).

1 ♂, Gizo, November 1903 (No. A. 727).

1 ♂, 1 ♀, Choiseul, December 1903 (Nos. A. 900, 976).

88. *Calornis fulvipennis* (Jacq. & Puch.).

Lamprotornis fulvipennis Jacq. & Pucheran, *Voy. Pôle Sud, Zool.* iii. p. 81 (1853—Isabel, Solomons).

Lamprotornis grandis Salvadori, nom. emend. for *L. fulvipennis*.

Calornis maxima Tristram, *Ibis*, 1895, p. 375 (Isabel!). (Cf. *Nov. Zool.* 1902, p. 584.)

5 ♂♂, 1 ♀, Rendova, February 1904 (Nos. A. 1182, 1184, 1206, 1215, 1318, 1319).

1 ♂, 1 ♀, Gizo, October 1903 (Nos. A. 661, 662).

2 ♂♂, 1 ♂?, 3 ♀♀, Choiseul, December 1903 (Nos. A. 863, 901, 941, 949, 963, 997).

3 ♂ ad., 3 ♀ ad., 1 ♂ juv., Bougainville, April 1904 (Nos. A. 1504, 1535, 1561, 1600, 1632, 1658, 1680).

The young bird is considerably smaller, the feathers of the throat, head and neck are very elongated and attenuated, those of the rump and abdomen are shorter and more blackish, and the quills are darker brown, than in adult birds.

"Iris brown or dark red ; bill and feet black."

89. **Mino kreffti** (Scl.).

Gracula kreffti Sclater, *P. Z. S.* 1869. p. 120, pl. ix. ("Ins. Salomonenses").

4 ♂♂, 2 ♀♀, Rendova, February 1904 (Nos. A. 1194, 1195, 1222, 1236, 1284, 1298).

2 ♂♂, 4 ♀♀, Gizo, October 1903 (Nos. A. 646, 647, 693, 694, 697).

3 ♂♂, 3 ♀♀, Choiseul, December 1903 (Nos. A. 877, 878, 995, 996, 1016, 1038).

3 ♂♂, 3 ♀♀, Bougainville, April 1904 (Nos. A. 1517, 1518, 1549, 1577, 1620, 1621).

"Iris bright yellow, feet and bill orange (cadmium)."

The specimens from Bougainville are generally largest, those from Gizo smallest. We are, however, not ready to separate any subspecies, because the size varies considerably in the same islands.

90. **Macrocorax woodfordi vegetus** Tristr.

[*Macrocorax woodfordi* Grant, *P. Z. S.* 1887, p. 332 ; Guadalcanar.]

Macrocorax vegetus Tristram, *Ibis*, 1894, p. 30 (Bugotu—Isabel). Cf. *Nor. Zool.* 1902, pp. 583, 584).

1 ♂, 2 ♀♀, Choiseul, December 1903 (Nos. A. 861, 889, 958).

91. **Corvus meeki** Rothsch.

Corvus meeki Rothschild, *Bull. B. O. Club*, November 1904 (Bougainville).

2 ♂♂ ad., Bougainville, May 1900 (Nos. A. 1719, 1748).

"Iris brown, bill and feet black."

Only these two males of this remarkable new Raven were obtained by Mr. Meek.

NOTES ON A COLLECTION OF BIRDS, MADE BY MONS. A. ROBERT IN THE DISTRICT OF PARÁ, BRAZIL.

By C. E. HELLMAYR.

ALTHOUGH small, this collection is of great interest, as it adds somewhat to our scanty knowledge of the fauna of Pará. Since Natterer's and Wallace's time very little has been done in the exploration of the avifauna of that interesting district. Mr. Layard* collected some birds in 1872, and Professor J. B. Steere made small collections at different times—about which, however, nothing has been published, except some short notes on a few species,† and the description of a new *Synallaxis*.‡ Mr. W. A. Schulz sent a series of birds to Count Berlepsch, collected in 1892-94. Among them there was a specimen of the beautiful lost *Pipra opalizans* Pelz.,§ but a list of the other species contained in his collection has not yet appeared. . Thus we are far from a thorough knowledge of the ornithology of Pará, and it is to be hoped that some enterprising collector may continue the work so successfully taken up again by Mons. Alphonse Robert.

His collection was brought together at a place called *Igarapé-Assá*, which lies on the railway running from Pará to Bragança, about half-way between these two places. It numbers only about two hundred specimens, representing eighty-nine species. Nevertheless, it contains two very distinct new species and a hitherto overlooked form of *Derophtus accipitrinus*. Moreover, there are *ten* species which have not yet been recorded from Pará, and such rarities as *Pipra opalizans*, *Calospiza albertinae*, and *Heliothrix auriculatus phainolaema*. Two other birds, a *Myrmotherula* and the *Rhynchorhynchus olivaceus* of the following list, will also prove to be new to science when a better series is available for comparison.

A consideration about the relations of the Pará fauna would be premature now, and must be deferred until further and more extensive researches have been made.

From the little information we have as yet obtained it is evident that the district of Pará belongs to the great Amazonian subregion: but quite a number of species of the East Brazilian forest region extend their range to Pará, and there are also a good many peculiar species, of which only the following need be mentioned:—*Pipra opalizans*, *Xipholena lamellipennis*, *Dysithamnus incertus*, *Hypocnemis vidua*, *Phlegopsis parvirens*, *Conopophaga roberti*, *Dendrocygna parvirens*, *Synallaxis omissa*, *Gymnostinops bifasciatus*, *Heliothrix auriculatus phainolaema*, *Pipile cajan*, and *Crax pinima*. Some of these may perhaps be traced farther inland along the Lower Amazon, but it is to be remembered that Mr. Riker¶ met with a very different lot of birds at Santarém.

* E. L. Layard, "Notes on Birds observed at Pará," *Ibis*, 1873, pp. 374-396.

† Sclater & Salvin, "On the Collection of Birds made by Prof. Steere in South America"; *P. Z. S.* 1878, pp. 135-142.

‡ *Synallaxis omissa* Hartert, *Bull. Brit. Orn. Cl.* xi, No. 81 (January 1901) p. 71.

§ Berlepsch, *Ibis*, 1898, p. 60.

¶ I do not mention Dr. Goeldi's list of the birds from the Upper Capim River, as this district is faunistically not quite identical with that of Pará (cf. *Ibis*, 1903, pp. 472-500).

¶ *Auk*, vii. (1890), pp. 131-37, 265-71; viii. (1891) pp. 24-31, 158-64.

Regarding the form of the present paper I have only to say a few words. In every case the original description has been carefully consulted, and whenever possible specimens from the typical locality have been compared. Of other literature, I quoted the papers about Natterer's, Layard's, and Wallace's collections from Pará.

Species recorded for the first time as occurring in the Pará district are marked with an asterisk.

I wish to express my sincere thanks to Messrs. Rothschild and Hartert, who placed this interesting collection in my hands for determination. It is now preserved in the Tring Museum.

1. *Troglodytes musculus clarus* Berl. & Hart.

Troglodytes musculus Naumann, *Vög. Deutschl.* iii. (1823) p. 724 table, (Bahia).]

T. musculus clarus Berlepsch & Hartert, *Noct. Zool.* ix. (1902) p. 8 (Bartica Grove, Brit. Guiana).

T. Americana (nec Audubon!) Pucheran, *Arch. Mus. Paris* vii. (1855) p. 338 (Cayenne—type in Paris Museum examined).

T. furvus Layard, *Ibis*, 1873. p. 377 (Pará).

Two ♀ ♀, 25, 26. i. 04. Nos. 1942, 1945. "Iris brunn."

They agree with a series from British Guiana, and are very much paler underneath than typical *T. musculus* from Bahia. I examined the examples collected by Natterer at Forte do Rio Branco and Barra do Rio Negro; they belong likewise to the pale northern form.

Mr. Oberholser* published an excellent account of the species of the genus *Troglodytes*, which enlightened us on various questions. But owing to lack of proper material the author has fallen into several errors that require correction. Count Berlepsch and myself, in a joint paper on little-known types of South American birds,† have already shown that *T. audax* Tsch. refers to the form inhabiting the coast region of Peru, which Mr. Oberholser described as *T. m. enochrus* (l.c. p. 207). To the same form applies the description of *T. m. murinus* Less., and not to *T. m. tectellatus*. *T. m. puna* Berl. & Stolz., regarded by Mr. Oberholser as synonymous with the last-named form, has nothing whatever to do with it, but is a pure synonym of *T. m. rex*. By some oversight, the Count tells me, the same form has been described twice by him, he having entirely forgotten the publication of the name *T. m. rex*.

T. m. tectellatus Lafr. & Orb. is confined to the coast region of Tacna in Northern Chili, whence Count Berlepsch has a good series. It is, in fact, but the southern representative of *T. m. audax*, and only distinguishable by its more distinct dark barring on the upper side. *T. m. rex*, on the other hand, is a very distinct subspecies, and ranges from Central and S.E. Peru to East Bolivia and Mattogrosso. *T. m. wiedi* Berl. is by no means confined to Santa Catharina, but is widely distributed over S.E. Brazil. I have specimens from Southern Minas, Rio S. Paulo, Rio Grande do Sul, and Santa Catharina. *T. m. musculus*, however, is restricted to Bahia; at least it does not reach farther south, but it may extend into the states of N.E. Brazil.

* *Proc. U. S. Nat. Mus.* xxvii. (1901) pp. 197-210.

† *Journ. f. Ornith.* 1905. p. 1-33.

2. * *Thryothorus genibarbis* Swains.

Thryothorus genibarbis Swainson, *Anim. in Menag.* (1838) p. 322 ("Brazil"—we accept *Bahia* as the typical locality).

♂ ad., February 21, 1904; No. 1958. ♀ jr., May 1904; No. 2166. "Iris brun-rouge."

These specimens agree exactly with examples from Bahia, but have slightly larger bills, and the male has the back of a much darker rufous brown. A female from Pará, collected by Mr. W. A. Schulz, in Count Berlepsch's Museum, however, is in no way different from a series of Bahia skins.

This is the first record of the species for the Lower Amazons, but Natterer collected a male near Borba, on the Rio Madeira, which was examined by me some years ago.

3. *Cyclarhis gujanensis* (Gm.).

Tanagra gujanensis Gmelin, *Syst. Nat.* 1. ii. (1788) p. 893 (ex Buffon—"Gujana").
Cyclarhis gujanensis Sclater & Salvin, *P. Z. S.* (1867) p. 569 (Pará, March—June).

One ♀ ad., January 21, 1904. No. 1928. "Iris jaune."

This specimen differs from others collected by the late H. Whitely in British Guiana only in its rather narrower chestnut frontal band and in having the yellow on the throat and foreneck of a more greenish tint. It is an adult bird, with the plumbeous spot at the base of the lower mandible.

4. * *Dacnis angelica melanotis* Strickl.

[*Dacnis angelica* De Filippi, *Atti Rion. Sc. Ital.* (1845) p. 404 (Colombia).]
Dacnis melanotis Strickland, *Contrib. Ornith.* (1851) p. 16 (Cayenne—ex Buffon; Demerara).

One ♂ ad., April 11, 1904. No. 2047. "Iris jaune."

The eastern form is perhaps barely separable, even subspecifically. The only difference I can find between my Pará specimen and a series of Peruvian and Bogota skins is the slightly darker blue colour of the former. The females, however, present rather marked differences. Two specimens taken by Professor Steere at Benevides, near Pará, lack almost entirely the olive-greenish tinge on the sides of the body, and the middle of the abdomen is whitish (not creamy). I cannot say whether these points of distinction will hold good when a better series of *D. angelica* is compared.

The proper name of the eastern form, if separable, is as given above, *D. arcangelica* (sic!) Bp.,* being strictly referable to the Bogota bird, for Bonaparte says: "*D. arcangelica* Bp. (*angelica* ex Bogota Auct.) sanè diversa."

The species is new to the fauna of Pará.

5. *Dacnis cayana* (Linn.).

Motacilla cayana Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 336 [ex Brisson—Cayenne (excl. Hernandez - Mexico)].

Dacnis cayana Sclater & Salvin, *P. Z. S.* (1867) p. 570 (Pará); Layard, *Ibis*, 1873. p. 378 (Pará).
Dacnis cyanoccephala Pelzel, *Zur Ornith. Brasil.* i. (1867) p. 25 (Pará).

Two ♂♂ ad., April 6, 24, 1904. Nos. 2035, 2132. "Iris brun-rouge" (2132); "grenat foncé" (2035).

* *Bull. Société Linnéenne Normandie* ii. (Caen 1857) p. 31 [Catalogue . . . des oiseaux recueillis à Cayenne par M. E. Desplanché]

6. *Cyanerpes caeruleus* (Linn.)

Certhia caerulea Linnaeus, *Syst. Nat.* ed. x. (1758) p. 118 (ex Edwards—Surinam).

Cereba caerulea Pelzeln, *Zur. Orn. Bras.* i. (1867) p. 25 pt. (Barra, Pará).

Cereba caerulea Layard, *Ibis*, 1873. p. 378 (Pará).

Two ♂♂ and two ♀♀, taken 23. i., 30. iv., 18. i., 7. iv. 1904. Nos. 1938, 2156, 1910, 2037. Iris “brun foncé,” “bleu-noir” and “brun.”

These specimens agree perfectly with Cayenne skins, which we may consider to be typical, but have a little shorter bills. The bill measures :

♂ ad., Cayenne, 19 mm.

♂ ad., Bemfica, 18½ mm.

♂ ad., Pará (Steere coll.), 17 mm.

Two ♂♂, Igarapé-Assu, 17½ mm., 18 mm.

Pará is the most southerly locality for *C. caeruleus* in Eastern Brazil.

7. *Cyanerpes cyaneus* (Linn.).

Certhia cyanea Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 188 (ex Edwards, Brisson, Macgregor. We take Surinam ex Edwards as typical locality).

Cereba cyanea Sclater & Salvin, *P. Z. S.* 1867. p. 570 (Pará, Febr.)

Cereba cyanea Layard, *Ibis*, 1873. p. 378 (Pará).

One ♀ only, April 7, 1904. No. 2040. “Iris bleu noir.”

8. *Coereba chloropyga* (Cab.).

Certhiola chloropyga Cabanis, *Mus. Hermann* i. (1850) p. 97 (Bahia).

Certhiola chloropyga Sclater & Salvin, *P. Z. S.* 1867. p. 570 (Mexican Island).

Certhiola chloropyga Layard, *Ibis*, 1873. p. 378 (Pará).

One ♀ in worn plumage, January 21, 1904. No. 1924. “Iris brun.”

This specimen, as well as a male, collected by Professor Steere near Bemfica, agree exactly with topotypical skins from Bahia. The back is pale olive-grey, the rump very pale olive yellowish, and there is no visible wing-speculum. *C. guianensis* (Cab.) is a very distinct form, differing at a glance by its bright yellow rump, and darker, more sooty greyish back. Like in *C. chloropyga*, there is no wing-speculum, or it is but slightly indicated below the primary coverts. On the other hand, *C. luteola* (Cab.) has always a large white speculum, and is much darker (sooty blackish) on the back than the two foregoing species. These differences are quite constant in comparing a series of thirty-four *C. chloropyga*, sixteen *C. guianensis*, and sixty-nine *C. luteola*. Their distribution is as follows :

1. *C. chloropyga* (Cab.) E. Brazil from Rio Grande do Sul to Pará. I have not seen specimens from Mattogrosso, which may be different.
2. *C. guianensis* (Cab.) British Guiana (Roraima, Merumé Mts., Camacusa, etc.) ; N. Brazil ; Upper Rio Negro (Marabitanas, Lamalonga, Cobati) ; S. Venezuela ; Aura River.
3. *C. luteola* (Cab.) Venezuela (coast region southwards to the Orinoco River) ; Trinidad, Tobago.

9. **Calospiza punctata* (Linn.)

Tamaga punctata Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 316 (ex Brisson — “Indes Orientales” — errore ! we substitute *Cayenne*).

One “♂” ad., taken April 13, 1904. No. 2051. “Iris brun.”

This specimen agrees in colour and size with a series from the interior of

British Guiana, and differs only in the rather coarser black spotting on the throat and breast. The spots are also extended along the sides of the abdomen, while these parts are uniform pale green in the Guiana specimens. A series from Cayenne should be compared.

C. punctata has not yet been recorded from the vicinity of Pará, though Natterer collected several examples at Manaos.

10. * *Calospiza albertinae* (Pelz.).

Calliste albertinae Pelzeln, *Ibis*, 1877, p. 337 (Salto do Girao, Rio Madeira).

One ♂ ad. from Igarapé-Assu, Pará, 50 m.; April 14, 1904. No. 2131. "Iris brun-rouge, pattes gris-bleu, bec brun, plus clair en dessous."

Wing $73\frac{1}{2}$, tail 49, bill $11\frac{1}{2}$ mm.

Fancy my surprise when finding this bird in the collection! It is the second known specimen of the species, the type of which came from a very remote district, viz. from the upper course of the Rio Madeira, not far from the Bolivian frontier. An actual comparison might perhaps show some differences, but it would be impossible to judge their value from a single specimen. The Pará example agrees with Pelzeln's description, but differs in having the sides of the body and the throat green, while in the type of *C. albertinae* the whole lower surface except the (green) under tail-coverts is said to be blue. It differs from *C. gyroloides* in the much more yellowish green colour of the back and wings, becoming still more yellowish on the nape without forming a distinct collar; and in having the shoulder-patch clear orange-rufous [Ridgway, *Nomencl.* Pl. IV. fig. 13] instead of golden yellow. Moreover, the throat is green, with a hardly perceptible bluish tinge, and the green on the sides of the body is more extended.

11. *Tanagra episcopus* Linn.

Tanagra Episcopus Linnaeus, *Syst. Nat.* xii. 1 (1766) p. 316 (ex "L'Evesque"; Brisson, *Orn.* iii. p. 40: "Brésil"—coll. Réaumur.*)

Tanagra caelestis Spix, *Ac. Brasil.* ii. (1825) p. 42 part. descr. ♀ (Pará). [Types examined.]

T. episcopus Scater & Salvin, *P. Z. S.* 1867, p. 571 (Pará); Pelzeln, *Orn. Bras.* iii. (1869) p. 208 (part., Pará); Layard, *Ibis*, 1873, p. 379 (Pará).

One ♂ ad. and two immature ♂♂, 8. iv., 13. iv., 14. iv. 1904. Nos. 2042, 2052, 2084. "Iris brun."

The adult male agrees in every respect with others from Surinam and British Guiana, but lacks the pale violaceous hue on the lower surface.

12. *Tanagra palmarum* Wied. subsp.

Tanagra palmarum Wied, *Reise Brasil.* ii. (1821) p. 76 (Canavieras, Bahia); Scater & Salvin, *P. Z. S.* 1867, p. 571 (Mexiana Island); Layard, *Ibis*, 1873, p. 379 (Pará).

Tanagra melanoptera (nec Scater) Pelzeln, *Zur Orn. Bras.* iii. (1869) p. 209 (Rio Muriá, near Pará).

One ♂ ad. 24. i.; ♀ 19. i.; ♂ juv. 21. iv. 1904. Nos. 1915, 1940, 2121. "Iris brun."

These specimens, as well as some others collected by Prof. Steere near Pará,

* Brisson's description is quite clear and undoubtedly referable to the bird now known as *T. episcopus*. (Cf. "les petites couvertures du dessus de l'aile sont d'un gris-blanc tirant sur le violet; les grandes sont d'un verd-bleu." The only place in Brazil where *T. episcopus* occurs is the vicinity of Pará. It is hardly to be believed that in Brisson's time specimens from Pará were available. Brisson's type is more likely to have come from Cayenne.

agree with typical *T. palmarum* from S.E. Brazil in having distinct greenish edges to the quills and tail-feathers, but they are considerably smaller, in this respect approaching *T. p. melanoptera*. Most likely the birds from Pará represent an undescribed race—at any rate they never belong to *melanoptera*.

Eighteen adult specimens from S. Paulo, Minas, and Bahia (*T. palmarum*) measure: al. 99—103; caud. 78—82 mm.

Four adults from Pará: al. 92—96; caud. 71½—77 mm.

Nine adults from N.E. Peru (Xeberos, etc.)—coll. Bartlett—topotypical *T. p. melanoptera*: al. 91—96; caud. 69—75 mm.

I have no time now to discuss at length the various subspecific forms of *T. palmarum*, but I may remark that Mr. Ridgway* is quite mistaken in considering *T. p. violilavata*, Berl. & Tacz., as a synonym of *T. p. melanoptera*. It is a very distinct form, at once known by its nearly uniform, bright violaceous colour above and below, and is evidently restricted to the western slopes of the Andes in Ecuador. I have now before me a series of fifteen specimens (and have seen others) which fully bear out the characters assigned to the form by its describers. I may add that the Tring Museum possesses a series of 120 specimens of the *T. palmarum* group which has been studied in this connection.

13. *Ramphocelus jacapa* (L.).

Tanagra Jacapa Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 313 (ex Edwards: Surinam—et Brisson: Cayenne).

Ramphocelus jacapa Selater & Salvin, *P. Z. S.* 1867. p. 571 (Mexiana and Pará): Layard, *Ibis*, 1873. p. 379 (Pará).

Two ♂♂, 2. ii., 24. iv.—Nos. 1958, 2135; ♀ 22. i. 1904.—No. 1932.

One male is quite indistinguishable from typical *jacapa* from Cayenne and Surinam, while the other inclines towards *R. j. connectens*, but it still has a faint crimson wash on the back, which is dull black in the last-named bird. *R. j. connectens*, Berl. & Stolz., is widely distributed in Brazil south of the Amazon: in fact, all records of *R. jacapa* from that region pertain to the former. The birds collected by Natterer in Goiaz and Mattogrosso and those shot by M. A. Robert in Minas Geraes are absolutely identical with topotypical specimens of Central Peru.

14. *Tachyphonus cristatus brunneus* (Spix).

[*Tanagra cristata* Gmelin, *Syst. Nat.* 1. ii. (1788) p. 898 (ex Brisson & Buffon—Cayenne).]

Tanagra brunnea Spix, *Av. Bras.* ii. (1825) p. 37, tab. 49, fig. 2 = ♂ juv. (Rio de Janeiro).

Tachyphonus cristatus brasiliensis Selater, *Cat. Birds Brit. Mus.* xi. (1886) p. 211 (Brazil).

Tachyphonus cristatus Selater & Salvin, *P. Z. S.* 1867. p. 571 (Pará, May 1849.—“Agrees with Brazilian specimens”).

Two adult ♂♂ in perfect plumage, 13. i., 18. v. 1904.—Nos. 1937, 2175. “Iris brun.”

I have also before me one ♂ ad., collected by Prof. Steere at Benevides, near Pará. They agree best with a series of *T. c. brunneus* from Pernambuco, Bahia, Rio and S. Paulo. The crest is quite as full and long, but even darker, of a beautiful fiery red. No. 1937, however, agrees in the colour of the crest exactly with specimens from more southern localities. The gular stripe is decidedly darker ochraceous in *T. c. brunneus* than in the Pará examples, but one skin from S. Paulo is scarcely different from the latter birds.

* *Birds North and Middle America*, ii. (1902) p. 58 f.

Typical *T. cristatus*, from Cayenne, is very different, having but a very small dark ochraceous gular spot and the crest reddish orange, bordered anteriorly and laterally with creamy-buff.

I have before me forty-seven adult ♂♂, and it may not be out of place to say a few words about the subspecies of *T. cristatus*. I can distinguish the following forms :—

1. *Tachyphonus cristatus cristatus* (Gm.).

Typical locality : Cayenne.

Crest small, reddish orange, broadly bordered in front and laterally with creamy-buff. Gular spot very small, dark ochraceous.

2. *T. cristatus cristatellus* Scl.

Typical locality : Bogota.

Crest small and bordered with creamy-buff as in No. 1, but bright orange-red. Gular spot variable.

Hab. : "Bogota"—coll. : N.E. Peru (Loretoyacu, Pebas, etc.), N.W. Brazil : Marabitanas, Barcellos, Borba, Engenho do Gama in Mattogrosso ; Venezuela : Caura River, a tributary of the Orinoco.

3. *T. cristatus intercedens* Berlepsch.

The type is of the so-called "Orinoco" make.

Crest pure orange-yellow, without any reddish admixture, but as in Nos. 1 and 2 bordered with creamy-buff.

Hab. Orinoco Delta and the adjoining parts of British Guiana.

4. *T. cristatus brunneus* (Spix).

Typical locality : Rio de Janeiro.

Crest much longer and fuller than in Nos. 1, 2, 3, and of a beautiful fiery-red. There is only a faint indication of a fulvous margin on the anterior border. Gular spot very large, pale ochraceous.

Hab. Eastern Brazil, from S. Paulo to Pará.

15. *Tachyphonus surinamus* (Linn.)

Turdus surinamus Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 297 (ex Brisson : Surinam).

Tachyphonus surinamus Sclater & Salvin, *P. Z. S.* 1867. p. 571 (Pará, March and May).

One male, in moult, taken April 27 ; two ♀♀ taken 19. i., 27. iv. 1904. Nos. 2148, 2153, 1916. "Iris brun."

An adult ♂, collected by Prof. Steere near Bemfica, has a large, bright ochraceous patch, mixed with ferruginous, on each side of the chest, agreeing in that respect with three ♂♂ from Borba (Natterer coll.). In one specimen from Cayenne—unfortunately not quite adult—there is only a small white spot with a slight buffy admixture. Topotypical Surinam birds are not available for comparison. More material is required to settle the question whether the Pará form is separable.

16. *Arremon silens* (Bodd.).

Tanagra silens Boddart, *Tabl. Pl. cul.* (1783) p. 46 (based on Daubenton, *Pl. cul.* 742 : Cayenne).

Arremon silens Sclater & Salvin, *P. Z. S.* 1867. p. 572 (Capim River) : Layard, *Ibis*, 1873. p. 380 (Pará).

One male and one female, January 31 and April 27. Nos. 1953, 2152.

These specimens agree very well with examples from British Guiana and the Orinoco region, the male differing only in its much narrower jugular band.

17. *Saltator magnus* (Gm.).

Tanagra magus Gmelin, *Syst. Nat.* 1. ii. (1788) p. 820 (ex Buffon : Cayenne).

Saltator magnus Scater & Salvin, *P. Z. S.* 1867. p. 572 (Pará) : Layard, *Ibis*, 1873. p. 380 (Pará).

♂ ad. 3. iii. 1904.—No. 2011 ; ♀ January 27, 1904.—No. 1947. “ Iris brun.”

18. *Lamprospiza melanoleuca* (Vieill.).

Saltator melanoleucus Vieillot, *Nouv. Dict.* xiv. (1817) p. 105 (“ l’Amérique méridionale ”).

Lamprospiza melanoleuca Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 218 (Pará).

♂ ad., taken April 14, 1904. No. 2083. —Al. 95 ; caud. 64½ ; rostr. 17½ mm. “ Iris brun-rouge, pattes noires, bec grenat.”

♀, moulting, taken April 15, 1904.—Al. 96 ; caud. 71½ ; rostr. 17 mm. Soft parts as above.

Both these specimens have the bill bright blood-red. This colour evidently fades soon after death, as shown by two examples obtained by Prof. Steere near Pará, which have dark yellow bills.

The female differs from the male sex in having the whole back and the scapulars light cinereous and the lower parts pale creamy (instead of pure white). The upper wing-coverts, however, are glossy black as in the male, not cinereous as stated in the *Cat. Birds*, xi. p. 297.

Vieillot’s description suits our birds very well, but the upper mandible is certainly not black, as stated by Vieillot.

19. *Pitylus erythromelas* (Gm.).

Loxia erythromelas Gmelin, *Syst. Nat.* 1. ii. (1788) p. 859 (ex Latham : Cayenne).

Pitylus erythromelas Scater & Salvin, *P. Z. S.* 1867. p. 572 (Capim River, June 1849).

Two adult males, taken 23. iv., 7. v. 1904. Nos. 2129, 2167. “ Iris brun ” and “ bleu-noir.”

The specimens agree exactly with a series from British Guiana (coll. Whitely) in colour and size.

20. *Pitylus canadensis* (Linn.).

Loxia canadensis Linnaeus, *Syst. Nat.* xii. i. (1766) p. 304 (ex Brisson—“ Canada ”—errore !

We substitute *Cayenne*).

Pitylus cayannensis Pelzeln, *Zur Orn. Bras.* iii. (1869) p. 221 (Borba, Pará).

Pitylus cordis Scater & Salvin, *P. Z. S.* 1867. p. 572 (Pará).

Three specimens, two marked ♂, one ♀, taken 27. i., 5. ii., 15. iv. 1904. Nos. 1946, 1963, 2091.

They agree with examples from British Guiana collected by the late H. Whitely. The form inhabiting S.E. Brazil, of which I have before me a good series from Rio and Bahia, differs only in its larger size, especially constantly longer tail and in having the forehead and crown much brighter coloured, pure golden-yellow, instead of being yellowish green like the back. Moreover, the bill is rather shorter and thicker. This southern subspecies has to stand as *P. c. brasiliensis* (Cab.).

Mr. Scater* gives as one of its distinctive characters the “ black front.” But none of my ten specimens from Rio, Minas, and Bahia show any trace of this feature ; on the contrary, the forehead is always yellowish green. One ♂ ad. from Pernambuco, however, differs very markedly in having a broad black

frontal band and the whole lower surface of a much brighter yellow. Otherwise, it agrees in colour and size with *P. c. brasiliensis*. On examining the series in the British Museum, I find that the two specimens from Pernambuco (coll. W. A. Forbes) have the black frontal band, which is altogether wanting in the ten other examples from Bahia and Rio, and the lower parts rather brighter than the latter. I propose, therefore, to separate the form of Pernambuco as

***Pitylus canadensis frontalis* n. subsp.**

Similis subspeciei *P. c. brasiliensis* dictae, sed vitta frontali nigra et colore subtus distincte clariore facile distinguendus.

Type in Mus. Tring, No. 1742. A. Robert coll. "♀" ad. S. Lourenço, Pernambuco, 28 to 60 metr. elev., July 29th, 1903. Wing 94, tail 81, bill 16½ mm.
Hab. Pernambuco, N.E. Brazil.

21. * ***Guiraca rothschildii* Bartl.**

Guiraca rothschildii E. Bartlett, *Ann. Mag. Nat. Hist.* (6) vi. (Aug. 1890) p. 168 (River Carimang, Brit. Guiana. Types now in Tring Museum, examined).

G. cyanea (nec Linné!) Chapman and Riker, *Auk* vii. (1890) p. 268 (Santarem).

Cyanocopsa cyanoides (nec Lafresnaye!) Ridgway, *Bull. U.S. Nat. Mus.* No. 50 ("Birds of North and Middle America," Part I.) (1901) p. 599 (Brit. Guiana to Lower Amazon).

Guiraca cyanea rothschildii Berlepsch and Hartert, *Nov. Zool.* ix. (1902) p. 24 (Orinoco region).

One adult ♀, taken March 4, 1904. No. 2013. "Iris brun."

In the shape of the bill and coloration this specimen agrees exactly with the type female from River Carimang; and is, of course, very different from the female of *G. cyanea*. Both the upper and lower surface are very much darker than in the latter bird, and the bill is altogether different, being much longer and straighter.

Some time ago I examined in Count Berlepsch's collection one male, collected by Mr. W. A. Schulz near Pará. It agrees perfectly with examples from British Guiana and N.E. Peru. Although recorded from Santarem, this is, I believe, the first record for Pará.

G. rothschildii seems to me to be decidedly distinct from *G. cyanea*, and in my opinion it is but the southern representative of *G. concreta cyanoides*, with which it agrees in the shape of the bill. The females of both forms, too, are very much alike, that of *G. c. cyanoides* being only distinguishable by its rather brighter rusty-brown coloration. On the other hand, *G. cyanea* has a much shorter and much more curved bill, and the female is very different, as said above. Moreover, in the vicinity of Puerto Cabello, N.W. Venezuela, there occurs, side by side with *G. cyanea*, a slightly modified form of *G. rothschildii* which seems to be an intermediate link between the latter and *G. c. cyanoides*. These facts seem to point towards specific distinctness of *G. cyanea* and *G. rothschildii*.

The latter is the species to which Mr. Ridgway—quite erroneously applied the name "*cyanoides*." M. de Lafresnaye, when describing his "*Corcoranus cyanoides*," gave, in the Latin diagnosis, only the characters of the "female or junior avis," which, consequently, must be regarded as the *actual type*. It has no bearing whatever on the case that the bird supposed by Lafresnaye to be the male of *G. cyanoides*, now turns out to belong to *G. rothschildii*. Therefore Mr. Ridgway was quite in error in considering the male specimen in the Boston Society collection as Lafresnaye's type. A glance at the description of the latter

proves that the real (female) type never was in the late Baron's possession, but formed part of Delattre's collection, which was purchased by Mr. Alexander Wilson and presented by him to the Academy of Natural Science of Philadelphia. (*Rev. Zool.* 1847. p. 67.)

In Mr. Stone's paper on the type specimens of that collection* it is properly registered as "No. 9775, ♂ Panama, Delattre coll. Type." Lafresnaye's description thus refers without doubt to the bird renamed by Mr. Ridgway *Cyanocompsa concreta cyanescens*, and the latter name becomes a synonym of *Gairana c. cyanoides* (Lafr.).

22. *Sporophila gutturalis* (Lcht.).

Fringilla gutturalis Lichtenstein, *Verz. Dobl.* (1823) p. 26 (S. Paulo).

Loxia plebeja Spix, *Ar. Bras.* ii. (1825) p. 46, tab. 60, fig. 3 (on the plate s.n. "*Loxia ignobilis*").

Loxia ignobilis id. *l.c.* p. 46, tab. 59 fig. 3 (on the plate "*Loxia plebeja*") (Pará).

Sporophila gutturalis Selater & Salvin, *P. Z. S.* 1867. p. 572 (Pará, October); Layard, *Ibis*, 1873. p. 380 (Nazaré, near Pará).

♂ ad., 2 ii. 1904. No. 1959. "Iris brun, bec gris-bleu."

Not different from ordinary Brazilian specimens except in having the abdomen slightly paler yellowish. With a large series before me I can no longer distinguish *S. g. pallida* Berl., the supposed characters being by no means constant. *S. g. olivacea* (Berl. and Tacz.) from Western Ecuador, however, is easily recognizable by its much deeper yellow abdomen and some other slight differences.

23. *Volatinia jacarina splendens* (Vieill.).

[*Tanagra Jacarina* Linnaeus, *Syst. Nat.* xii. i. (1766) p. 314 (ex Margrave—Brasilia).]

Fringilla splendens Vieillot, *Nouv. Dict.* xii. (1817) p. 173 (Cayenne).

Volatinia jacarina Layard, *Ibis*, 1873. p. 380 (Nazare, Pará); Pelzeln, *Zur Orn. Brasil.* iii. (1869) p. 226 (Pará).

One ♂ jr., January 21, 1904. No. 1927. "Iris brun."

I have before me also an adult ♂, collected by Prof. Steere near Pará. These specimens have only the longer under wing-coverts and a small patch on the shoulders white, agreeing in both these respects with several examples from Cayenne. Messrs. Salvin and Goldman (*Biology. Centr. America* i. p. 358) wrongly referred the Pará specimens to *V. jacarina* from Brazil which differs in having all the under wing-coverts and axillaries as well as a distinct patch on the base of the quills pure white. The white shoulder-patch, too, is much larger and the wings are longer.

24. *Coryphospingus cucullatus* (P. L. S. Müll.).

Fringilla cucullata P. L. S. Muller, *Natursyst. Suppl.* (1776) p. 166 (ex Daubenton, *Pl. col.* 181. fig. 1.—Cayenne).

Fringilla cristata Gmelin, *Syst. Nat.* i. ii. (1788) p. 926 (based on the same).

Coryphospingus cristatus Layard, *Ibis*, 1873. p. 380 (Pará—August).

One ♂ nearly adult, from Igarapé-Assú, taken January 21, 1904. No. 1926. "Iris brun-rouge."

This specimen as well as the ♂, collected by Layard, differ from a large series of skins from Paraguay and various parts of Brazil in rather stronger bill and in having the lower parts much paler, clear rosy-red instead of deep crimson or

* *Proc. Acad. N. Sci., Philadelphia*, 1900, p. 51.

vinous-red. None of my fifteen specimens from more southern localities show any approach to those from Pará. A male from British Guiana, however, is nearly as dark below as southern examples, and therefore I cannot believe that the birds from Pará constitute a different race. I think the difference may be due to age, for both the Pará specimens seem to be not quite adult.

25. *Cacicus haemorrhous* (Linn.).

Oriolus haemorrhous Linnaeus, *Syst. Nat.* xii. i. (1766) p. 161 (ex Brisson, qui describit avem ex Cayenna.—Mus. Rœalmur (excl. hab. Brasilia—errore!).

Cassicus affinis Swainson, *Birds Brazil* (1841) tab. 2.

Cacicus haemorrhous Scater & Salvin, *P. Z. S.* 1867. p. 573 (Pará).

Cassicus haemorrhous Layard, *Ibis*, 1873. p. 381 (Pará).

C. affinis Pelzelin, *Zur Orn. Brasil.* iii. (1869) p. 193 (part. Pará).

Two ♂♂ and one ♀, 19, 24. 15. iv. 1904. "Iris bleu-verd or bleu ciel." Nos. 2116, 2133, 2088.

These specimens are practically identical with others from Cayenne and British Guiana.

The nomenclature of the *Cat. Birds* xi. p. 324 ff. is wrong. The bird there named *C. affinis* ought to be called *C. haemorrhous*, while the form of the Brazilian forest region must bear the name *C. h. aphanes* Berlp. Brisson expressly states that the bird described was from Cayenne, and Linné's name is therefore strictly referable to the northern subspecies.

26. *Sclerurus caudacutus* (Vieill.).

Thamnophilus caudacutus Vieillot, *Nouv. Dict.* iii. (1816) p. 310 ("à la Guyane"—sc. Cayenne).

Sclerurus caudacutus Scater & Salvin, *P. Z. S.* 1867. p. 573 (Capim River).

One ♀ ad., 29. March 1904. No. 2025. "Iris brun foncé."

It differs from a large series of *S. umbretta* in lacking the deep chestnut-rufous colour on the rump, which is dark olive-brown like the back, and in having the forehead and the sides of the head strongly washed with rufous (instead of dull olive-brown). The throat, too, is purer white, and the colour of the breast and abdomen of a more rufous tint.

27. *Automolus infuscatus paraensis* Hart.

[*Amabates infuscatus*,* Scater, *Ann. Mag. Nat. Hist.* (2) xvii. (1856) p. 468 ("in Peruvia Orientali.")]

Automolus sclateri paraensis Hartert, *Nor. Zool.* ix. (1902), p. 61 ["Bemavides, near Pará."]

Amabates sclateri Pelzelin, *Zur Ornith. Brasil.* i. (1867) p. 41 [part.: Borba, Barra do Rio Negro, Pará].

Philydor erythrocerus (nec Pelzelin), Scater & Salvin, *P. Z. S.* (1867) p. 574 [Pará (part.).]

One ♀ ad., 27. April 1904. No. 2149. Al. 91; cand. 75; rostr. 21 mm.

This specimen agrees with the type, but is slightly smaller. The examples collected by Natterer near Borba and Barra do Rio Negro belong likewise to this subspecies.

The form of the Lower Amazon differs from the typical one in its dark greyish brown (not pale rufous) crown, and in having the back of a dull olive-brown.

Messrs. Scater and Salvin (*l.c.*), in their report upon Wallace's collection

* Pelzelin renamed this bird *A. sclateri* on account of there being already an *Amabates infuscatus* Bonap. But the latter is a pure nomen nudum, and therefore of no value.

from the Amazon, mention under the head of *Philydor erythrocerus* two specimens which differed from a typical specimen of the latter species in being "larger and stronger, clearer white below, and with a more rufous tinge on the wings. The superciliary stripes are absent, and the tail is longer and more rounded." These two skins are still in the British Museum, where I have examined them. They belong to *A. i. paraensis*, and have nothing to do with *P. erythrocerus*. In the *Cat. Birds* xv. p. 95 the mistake is already corrected, and the examples are placed with *Automolus selateri*.

28. *Philydor erythrocerus* (Pelz.).

Anabates erythrocerus Pelzeln, *Sitz. Ber. Akad. Wiss.* xxxiv. (1859) p. 105 ["Brasilia"—viz. Barra do Rio Negro, cf. *Orn. Brasil.* p. 39].

Philydor erythrocerus Selater & Salvin, *P. Z. S.* 1867, p. 574 (Pará) pt.

No. 1955. ♂ ad., Igarapé-Assù, 50 m., February 1, 1904. Al. 77; caud. 68; rostr. 16 mm.

No. 2029. ♂ ad., Igarapé-Assù, 50 m., April 2, 1904. Al. 90; caud. 74; rostr. 18 mm.

No. 2168. ♂ ad., Igarapé-Assù, 50 m., May 7, 1904. Al. 87; caud. 69; rostr. 18½ mm.

No. 1955 is a young bird, and much smaller than the other specimens. Robert's skins agree very well with the types in the Vienna Museum. A series from Cayenne is also not different.

29. *Glyphorhynchus cuneatus* (Leht.).

Dendrocolaptes cuneatus Lichtenstein, *Abhandl. Akad. Berlin u. d. Jahren* 1818-19 (publ. 1820) p. 204, tab. ii. fig. 2 ("in provincia Bahia": cf. *l.c. u. d. Jahren* 1820-21 (publ. 1822) p. 266.)

Glyphorhynchus cuneatus Selater & Salvin, *P. Z. S.* 1867, p. 574 (Pará and Capim River); Layard *Ibis*, 1873, p. 385 (Pará).

Two ♂♂, January 22 and 27, 1904. Nos. 1936, 1949.

30. *Dendrocincla fuliginosa* (Vieill.).

Dendrocopos fuliginosus Vieillot, *Nouv. Dict.* xxvi. (1818) p. 117 (ex "Le Grimpur enfumé," Levaillant, *Hist. nat. Promer.*, etc., p. 70, tab. 28: Cayenne).

Dendrocolaptes fumigatus Lichtenstein, *Abhandl. Akad. Berlin* 1818-19 (publ. 1820) p. 203 (based on the same).

Dendrocincla fumigata Selater & Salvin, *P. Z. S.* 1867, p. 574 (Pará); Pelzeln, *Zur Orn. Bras.* i. (1867) p. 42 (Pará).

Dendrocincla rufo-olivacea Ridgway, *Proc. U.S. Nat. Mus.* x. 1887 (1888) p. 493 (Diamantina, near Santarem).

One ♂, nearly adult, January 21, 1904.

It agrees perfectly with specimens from Cayenne and British Guiana (Rio Rupununi) in the Tring Museum. One ♂ from Benevides, near Pará (Storer coll.) is also not different. Besides these I examined a good series from Pará, Borba, and Maniós* (coll. Natterer), and a topotype of *D. rufo-olivacea* from Santarem, kindly lent by the United States National Museum. The latter is rather paler and more greyish olive-brown underneath than all the other specimens. Since those from Maniós are quite as dark as the skins from Cayenne and Pará, we must regard this slight difference as individual variation, because it is not possible that such closely allied forms should have the same distribution.

* *Dendrocincla fumigata* Pelzeln, *Zur Ornith. Brasil.* i. (1867) p. 42 (part.).

The figure of Levaillant is not a very good one, but cannot be referred to any other species, *D. fuliginosa* being the only one found in Cayenne. *D. phaeochroa* differs in lacking the buff postocular stripe, and in having the lower surface much more suffused with rusty without any trace of the pale markings on the lower throat and fore-neck, so conspicuous in *D. rufo-olivacea*.

31. * *Dendrocincla merula* (Licht.).

Dendrocolaptes Merula Lichtenstein, *Abhandl. Akad. Berlin a. d. J.* 1818-19 (publ. 1820) p. 204 [Cayenne : Mus. Berlin].

Den leocincla castanoptera Ridgway, *Proc. U.S. Nat. Mus.* x. 1887 (1888) p. 494 [Diamantina, near Santarem, Lower Amazon].

One ♂, not quite adult, January 21, 1904.

Like the type of *D. merula* from Cayenne which I have examined, it has the bill entirely black. One ♀ juv. from Borba (Natterer coll.) and the female type of *D. castanoptera* Ridgw., kindly lent by the authorities of the United States National Museum, have the bill also wholly black. One adult ♂ from Borba, two ♂♂ from Munduapo, Orinoco, one ♂ Marabitanas, one ♀ Rio Içanna, one ♀ Barra do Rio Negro, and four specimens from the Caura, have the lower mandible dirty yellowish. As regards colour, Robert's specimen agrees very closely with one ♂ from Munduapo, but has the back rather brighter. On the other hand, the specimen from Santarem is perfectly identical with the type from Cayenne.

There is considerable variation to be observed in the series before me. The ♂ from Rio Içanna is much the darkest of all, having the whole under-surface almost chestnut-brown. The ♀ from Borba and the ♂ from Marabitanas are a little paler, the latter with a strong rufous tinge underneath. The other skins before me are less deeply coloured, those from the Caura being the palest of all. The differences in colour do not depend on localities, since I have a pale and a dark specimen both from the Orinoco and from Borba on the River Madeira; neither does the colour of the bill, as one of two specimens from the latter place has the bill entirely black, whereas in the other the lower mandible is yellowish white. At any rate, there is no doubt that the birds from Pará and Santarem represent the true *D. merula*, because they agree with the type.

The following measurements may not be out of place :

Collection.	Number.	Sex.	Locality.	Wing.	Tail.	Bill.	Collector.
Vindob.	15,883	♂	Borba, June 22, 1830	mm. 103½	mm. 93½	mm. 29½	J. Natterer
"	15,884	♀ jr.	" Feb. 9, 1830	101½	88	26½	"
"	15,882	♀	Barra do R. Negro, May 14	98	83	25½	"
"	15,880	♂	Marabitanas, March 12	104	89	26½	"
"	15,881	♀	Rio Içanna, June 23	105	75	26	"
Berlepsch	12,111	♂	Munduapo, Orinoco, Feb. 25, 1899	106	84	26	G. K. Cherrie
Tring	12,109	♂ ad.	" Feb. 25, 1899	106	87	25	"
"	—	♀ ad.	Suapure, Caura, Venezuela, Feb. 20, 1899.	95½	76	23½	Klages
"	—	♂ ad.	Same locality, Feb. 20, 1899	102	84	27	"
"	—	♂ ad.	" Feb. 21, 1899	104	83	25	"
"	—	♀	Nicare, Caura, Jan. 9, 1901	95	80	23½	E. André
"	1,922	♂ jr.	Igarapé-Assú, Pará, Jan. 21, 1904	95	77	23½	A. Robert
U.S. Nat. Museum.	120,931	♀ jr.	Diamantina, Santarem, Jan. 15, 1887.	94	75	25	C. B. Riker.

* Topotype of *D. castanoptera* Ridgw.

32. *Dendrocolaptes certhia* (Bodd.).

Picus certhia Boddaert, *Tabl. Pl. enl.* (1783) p. 38 (based on Daubenton, *Pl. enl.* 621: "Le Picucule de Cayenne").

Dendrocolaptes caryanensis Sclater & Salvin, *P. Z. S.* 1867. p. 575 (Pará: specimens examined).

One ♀, May 2, 1904. No. 2158. Al. 122; cand. 121½; rostr. 36 mm.

I have also before me another ♀ juv., collected by Professor Steere near Marguary, August 23, 1879.

Both these specimens belong to typical *D. certhia*, of which I have a good series from Cayenne, British Guiana, and the Orinoco region. They have the lesser and median upper wing-coverts decidedly marked with blackish subterminal bars, the feathers of the pileum show the characteristic pale fulvous and blackish cross-bars, and the lower parts are finely but distinctly undulated with blackish, only the lower tail-coverts being uniform pale olivaceous-brown. In all these respects my Pará specimens, as well as those in the British Museum (Wallace coll.) agree perfectly with the typical bird from Cayenne.

On the other hand, one specimen from Diamantina, near Santarem, for the examination of which I am much indebted to Mr. Ridgway, differs very markedly from *D. certhia* (thirty specimens examined) in the following details. The whole pileum is nearly uniform pale olivaceous-brown, without the fulvous subterminal bars, and shows only traces of dark apical margins; on the lower surface there are but slight indications of dusky undulations on the fore-neck and middle of the breast, the rest of the under-parts being uniform olivaceous-brown. In the coloration of the lower parts this bird approaches *D. concolor* Pelz., but differs from it in its black upper mandible, less rusty abdomen, dusky vermiculations on the fore-neck, and in having blackish subterminal bars on the lesser and median wing-coverts like *D. certhia*. The form from Santarem has been named *D. obsoletus** by Mr. Ridgway, but this name having been previously used by Lichtenstein,† it requires a new one, and may be called

Dendrocolaptes certhia ridgwayi nom. nov.

We have thus three distinct forms:

1. *D. certhia certhia* (Bodd.), Cayenne, Surinam; British Guiana; Pará, Forte do Rio Branco and Barra do Rio Negro in North Brazil‡; on the Orinoco and its tributary, the Caúra River.
2. *D. certhia ridgwayi* Hellm., Santarem.
3. *D. certhia concolor* Pelz., Rio Madeira and Mattogrosso.

33. *Dendrornis spixii* (Less.).

Psittolaptes spixii Lesson, *Traité d'Orn.* (1831) p. 314 [based on *Dendrocolaptes tenuirostris* (nec Licht.), Spix, *Ar. Bras.* i. (1824) p. 88. tab. 91. fig. 2—"Brésil." We substitute as the typical locality Pará].

Dendrornis spixii Pelzeln, *Zur Ornith. Brasil* i. (1867) p. 45 [Pará.—Specimens in Mus. Vindob., examined].

D. ocellata (nec Spix!) Sclater & Salvin, *P. Z. S.* 1867. p. 575 [Pará.—Specimen examined].

D. fronteculus Ridgway, *Proc. U. S. Nat. Mus.* x. 1887 (1888) p. 526 [Diamantina, near Santarem, Lower Amazon]

One adult ♀, April 13, 1904. Al. 98½; cand. 84; rostr. 29 mm.

* *Proc. U. S. Nat. Mus.* x. 1887 (1888) p. 527 (Diamantina, Santarem).

† *Abhandl. Akad. Berlin* 1818-19 (publ. 1820), p. 203.

‡ Specimens in Mus. Vindob., examined.

It agrees perfectly with a female collected by Natterer near Pará. Having always suspected that the bird described by Mr. Ridgway might be the same as the present species, I asked the latter gentleman to compare his type with the specimen of *D. spixi* in the American Museum of Natural History. Mr. Ridgway kindly writes as follows: "I have now before me the American Museum specimen of *D. spixi*, from Pará. On comparing it with the type of my *D. fraterculus*, I note that they are very much alike, and probably the same form; but the type of *D. fraterculus* is badly made up, the head and neck being shoved back against the shoulders, and this causes some differences which are doubtless more apparent than real: for example, the back appears uniform olive-brown, except the extreme upper portion, and the pale spots on the chest appear (through crowding) to be shorter. **Actual** differences consist in the decidedly darker and more olive hue of the brown on both upper and under parts, and the darker (nearly black) ground colour of the pileum. These differences, however, are well within the range of individual variation in allied species, and I have little doubt the bird is really *D. spixi*."

D. spixi is a very distinct species, perhaps nearest related to *D. elegans* Pelz. and *D. insignis* Hellm., with which it agrees in shape and size of the bill. In colour it reminds one rather of *D. sasurans*, but the pale markings on the breast and belly are much more longitudinal, and the latter bird has a much larger and quite differently shaped bill.

It is astonishing that Mr. Elliot, in his monograph of the genus *Dendroornis*, declares *D. fraterculus* to be inseparable from *D. sasurans*—wholly neglecting their widely separated areas of distribution—and at the same time allows *D. spixi* to stand as a distinct species on the strength of the same specimen which Mr. Ridgway, as quoted above, states to be identical with the type of *D. fraterculus*!

34. *Dendroornis eytoni* Sel.

Dendrocolaptes Eytoni Selater, *P. Z. S.* 1853. p. 69. tab. 57 [River Capim, near Pará].

Dendroornis eytoni Selater & Salvin, *P. Z. S.* 1867. p. 575 [Pará]; Pelzeln, *Zur Ornith. Brasil.* i. (1867) p. 45 [Pará, Borba, etc.]; Layard, *Ibis*, 1873. p. 385 [Pará].

Two adult birds from Igarapé-Assu.

1. No. 1935. ♂ ad., January 22, 1904. AL 121; caud. 106; rostr. 45 mm.

2. No. 2150. ♂ ad., April 27, 1904. AL 111; caud. 95; rostr. 43½ mm.

The latter, though marked as a male, is probably a female, and differs from the larger one in having the pale shaft-stripes on the upper back more buffy, not so whitish. Both specimens have the bill entirely black, and the middle of the abdomen is slightly suffused with fulvous.

35. *Thamnophilus major semifasciatus* (Cab.).

[*Thamnophilus major* Vieillot, *Nouv. Dict.* iii. (1816) p. 313 (ex Azara—Paraguay).]

Diallactes semifasciatus Cabanis, *Journ. f. Ornith.* 1872. p. 234 ("Pará, Guiana, und Venezuela"—Pará as the typical locality accepted).

Thamnophilus major (nec Vieillot!) Selater & Salvin, *P. Z. S.* 1867. p. 575 (Pará); Layard, *Ibis*, 1873. p. 356 (Pará); Pelzeln, *Ornith. Brasil.* ii (1868) p. 75. pt. (Forte do Rio Branco, Rio Amajau, Pará).

One ♂ ad., April 13, 1904, No. 2048. "Iris grenat, bec noir, pied gris-bleu clair."

This northern subspecies differs from the typical form only in the lesser amount

of white on the tail. It inhabits Brazil north of the Amazon, Cayenne, Guiana, Venezuela, and Trinidad. Possibly, the female recorded by Riker and Chapman s.n. *T. melanurus** should also be referred to *T. m. semifusciatus*.

36. *Dysithamnus incertus* (Pelz.).

Thamnophtilus incertus Pelzel, *Zur Ornith. Brasil*, ii. (1868) p. 149. descr. ♀ [Pará--coll. Natterer, Mus. Vindob.].

Thamnophtilus simplex Selater, *Ibis*, 1873. p. 387. tab. xv. descr. ♂ ♀ [Pará : Selater & Salvin, P. Z. S. 1878. p. 139 [Vigia, near Pará].

Dysithamnus plumbeus (nec Wied!) Selater & Salvin, P. Z. S. 1867. p. 576 ["Amazons"].†

No. 1906. ♂ ad., Igarapé-Assu, Pará, 50 m.; January 17, 1904. Al. 70; caud. 60; rostr. $18\frac{1}{2}$ mm.

No. 1960. ♂ jr., Igarapé-Assu, Pará, 50 m.; February 2, 1904. Al. 67; caud. 55; rostr.; $17\frac{1}{2}$ mm.

No. 1933. (♂) jr., Igarapé-Assu, Pará, 50 m.; January 22, 1904. Al. 65; caud. 55; rostr. $18\frac{1}{3}$ mm.

No. 1912. ♀ ad., Igarapé-Assu, Pará, 50 m.; January 18, 1904. Al. 65; caud. $53\frac{1}{2}$; rostr. 18 mm.

The first specimen is a fully adult male, the two next show some remains of the young plumage in having the quills and wing-coverts edged or washed with brownish. Otherwise they have attained the dress of the adult.

The proper name of this species is the above one. Through the kindness of my friend Dr. von Loreuz, of Vienna, I was enabled to compare the type of *Th. incertus* Pelz. with those of *T. simplex* Sel. in the British Museum. As I had expected, the former agrees perfectly with the female of the latter species. Pelzel's name, being earlier, must be accepted, although he described only the female. The female sent by Robert differs from the specimens just mentioned in having narrow buff apical margins on the inner secondaries. Throat and fore-neck are paler ferruginous and less in contrast with the ochreous-brownish belly.

Mus. Vindob. ♀ ad., Pará, 1834. Coll. Natterer. Type of *T. incertus* Pelz. Al. 66; caud. 55 mm.

Mus. Brit. ♂ ad., Pará, 1873. Layard coll. Type of *T. simplex* Sel. Al. 72; caud. 57; rostr. 18 mm.

Mus. Brit. ♀ ad., Pará, 10.i.'73. Layard coll. Type of *T. simplex* Sel. Al. 70; caud. 60; rostr. 18 mm.

D. incertus (Pelz.) is a very near ally of *D. schistaceus* (D'Orb.)—in fact, its north-eastern representative—the male differing only in having the bend of the wing and the lesser wing-coverts markedly freckled or edged with white, whilst they are uniformly schistaceous in the latter bird. The females of the two species, however, are easily distinguishable; that of *D. schistaceus* having the lower surface much paler, brownish buff, almost buffy whitish on the throat and middle of the abdomen. The male of *D. plumbeus* (Wied) is also very similar to the same sex of *D. incertus*, but of a much darker slate-colour everywhere, has a considerably shorter tail, and all the upper wing-coverts are edged with white.

It is rather questionable if these three species can ultimately remain in the same genus as the short-tailed *Dysithamni*, but they seem to fit better into the

* Auk 1891, p. 28.

† I have examined the bird collected by Wallace on the Lower Amazon, and found it to be identical with the type of *T. simplex*. In the *Cat. Birds* xv. p. 226 it is again erroneously recorded among the specimens of *Dysithamnus plumbeus*.

latter genus than into *Thamnophilus*. At any rate they must be placed close together, as they agree perfectly in structure and style of coloration.

D. incertus seems to be strictly confined to the vicinity of Pará. *T. inornatus* Ridgw.,* from Santarem, is evidently the same as *D. schistaceus*. Of the latter species I compared specimens from Borba, which I cannot distinguish from Bolivian skins. What the so-called *Thamnophilus simplex*† from Santarem may be, I cannot say, but it is certainly not *D. simplex*, which never gets a black head.

37. * *Thamnomanes caesius* (Temm.).

Muscicapa caesia Temminck, *Rev. Pl. col.* livr. 3 (October 1820) tab. 17. fig. 1 (♂), 2 (♀) ["au Brésil et à la Guiane."—Temminck got his birds from the Prince of Wied, and therefore we may regard South-eastern Brazil‡ as the typical locality. Moreover, the description suits the Brazilian form much better, as there is no mention of a white interscapular patch].

Lanius caesius Lichtenstein, *Verz. Dobl. Berliner Mus.* (1823) p. 46 descr. ♂ part.; ♀.

One immature ♂ and one ♀ from Igarapé-Assú, 50 m. elevation.

The male shows still some remains of the young plumage in having the greater series of the upper wing-coverts olive-brown with rusty edges and the secondaries mostly brownish. On the back there are some olive-brown feathers, and the middle line of the abdomen is rusty. Otherwise it agrees with adult males of *T. caesius*, from S.E. Brazil, and presents no trace of the white interscapular patch which is so prominent in the allied *T. glaucus* Cab.

The female of *T. caesius* differs from that of the latter species in the following particulars: the upper surface is of a clear olive-brown, much less rufous; the abdomen and under tail-coverts are of a much paler ferruginous, the whole breast being dirty brownish buff, whereas in *T. glaucus* the deep ferruginous colour of the abdomen reaches as far as the fore-neck.

I may remark that, while the male of *T. caesius* possesses no white dorsal blotch, it is very well developed in the female, quite as large as in *T. glaucus*; in the latter species both sexes have the white dorsal patch.

It is very interesting to find *T. caesius* at Pará instead of *T. glaucus*, which one would have expected to occur there. It may be remembered, however, that the former species has already been collected by Natterer on the Rio Madeira, and lately I saw specimens which were procured on the Rio Juruá in N.W. Brazil.

No. 1919. ♂ jr., January 20, 1904. Al. 71; caud. 66; rostr. 17 mm.

No. 1948. ♀, January 27, 1904. Al. 72; caud. 64½; rostr. 17 mm.

38. *Myrmotherula* spec.

Myrmotherula huxwelli Sclater & Salvin, *P. Z. S.* 1867. p. 576 (Capim River—one female).

One ♀, April 5, 1904. No. 2033. Al. 52; caud. 23; rostr. 15 mm.

It agrees in colour and size with the specimen collected by Wallace on the Capim River, near Pará. They are much like the female of *M. huxwelli*, but differ at once by lacking the white interscapular blotch, which is always very well developed in the latter bird. Most likely they represent a new form, but it is not advisable to name it without knowing the male.

* *Proc. U. S. Nat. Mus.* x. 1887 (1888) p. 522.

† Riker & Chapman, *Auk* 1891, p. 28.

‡ "Ich erhielt ihn zuerst südlich am Flusse Iritiba, in den Waldungen von Villa Nova de Benevente [both in Espírito Santo], später auch im Sertong der Provinz Bahía."—Wied, *Beiträge Naturg. Brasil.* 3. ii. (1831) p. 828 f.

39. * *Myrmotherula longipennis* Pelz.

Myrmotherula longipennis Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 153 [Marabitanas, Rio Negro].

One young ♂, January 26, 1904. No. 1944.

Although not quite adult, it belongs without doubt to the present species, having the upper parts of the same dark slaty grey as a series from the Caura River, which I compared with the types in the Vienna Museum.

40. * *Myrmotherula cinereiventris* Scl. & Salv.

M. cinereiventris Sclater & Salvin, *P. Z. S.* 1867. p. 756 (pt. Cayenne, Surinam—type ex Cayenne : cf. *Cat. Birds* xv. p. 244).

No. 1913. ♂ ad., Igarapé-Assù, Pará, January 19, 1904. Al. 53½; caud. 26; rostr. 16 mm.

No. 1911. ♂ fere ad. Igarapé-Assù, Pará, January 18, 1904. Al. 55; caud. 28½; rostr. 15 mm.

No. 2028. ♀ ad., Igarapé-Assù, Pará, April 2, 1904. Al. 53½; caud. 27; rostr. 15½ mm.

The males hardly differ from a large series of skins from the Orinoco and Caura rivers, but the female is very much darker fulvous on the lower parts.

41. *Cercomacra tyrannina* (Scl.).

Pyriglena tyrannina Sclater, *P. Z. S.* 1855. p. 90, tab. 98 (Bogotá coll.) descr. ♂ ♀.

Cercomacra tyrannina Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 84 (Pará); Layard, *Ibis*, 1873. p. 387 (Pará).

Two ♂ ad., two immature ♂♂, and two ♀♀. 17. i., 13, 14, 22. ii., 2. iv. 1904. Nos. 1907, 1971, 1972, 1974, 1989, 2030.

These specimens are not different from topotypical Bogotá skins except in averaging somewhat smaller.

42. * *Cercomacra sclateri* nom. nov.

One ♀ ad., taken April 28, 1904. No. 2154. "Iris brun." Wing, 61; tail, 64; bill, 17; graduation of tail, 22 mm.

This specimen agrees in structure and colour with a female from Chayvetas, N.E. Peru (Bartlett coll.), in the British Museum. In both there is a distinct white patch on the shoulders, the upper wing-coverts have very distinct white apical margins, and the tail-feathers (except the middle pair) have large white tips. Robert's specimen differs from the Peruvian one in having the upper wing-coverts more mixed with blackish, the tips to the tail-feathers rather shorter, and the upper surface a little duller, less brownish. These differences, however, may be individual.

I take this opportunity to give a short review of the three first species of *Cercomacra*—viz. *C. caeruleascens*, *C. cinerascens*, and *C. napensis* of the *Cat. Birds* xv. I regret to say that the characters and distribution of these birds, as given in the work alluded to, are quite incorrect and insufficient. I examined the material in the Vienna, Tring, and Berlepsch Museums, and have likewise carefully gone over the series in the British Museum which formed the basis of Mr. Sclater's conclusions. Altogether I was able to study forty specimens.

a. Cercomatera cinerascens (Sch.).

Formicivora cinerascens Sclater, *P. Z. S.* 1857. p. 131 part (desc. part. : obs. et habitat : "in ripis fl. Napo").

Cercomatera napensis Sclater, *P. Z. S.* 1868. p. 572 (Rio Napo).

C. napensis Sclater, *Cat. Birds Brit. Mus.* xv. p. 265.

C. cinerascens Sclater, *Cat. Birds Brit. Mus.* xv. p. 264 (part. ; spec. *a—f, l, l*).

♂. Cinereous ; **no white patch on the shoulders** ; upper wing-coverts cinereous, sometimes with slight or even distinct white margins ; tail-feathers with distinct white tips varying in length from 3 to 5 mm. Graduation of the tail 18—22 mm.

Habitat. *Eastern Ecuador* : Rio Napo (ex Verreaux), Sarayaçu (Buckley). *N.E. Peru* : Pebas (Hauxwell). *Venezuela* : Munduapo, Orinoco (Cherrie), La Pricion and La Union on the Caura R. (E. André). *Brit. Guiana* : Bartica Grove, Camacusa, Ourumee (Whitely). *Cayenne* : Oyapoc (ex Verdey).

Measurements :

No.	Collection.	No.	Sex.	Locality and Date.	Wing.	Tail.	Bill.	Graduation of Tail.	Remarks.
					mm.	mm.	mm.	mm.	
1	Mus. Brit.		(♂) ad.	Rio Napo (ex Verreaux)	66	66	17	20	Type of <i>C. napensis</i> .
2	" "		(♂) ad.	Cayenne-make (ex Verreaux)	64	69	18	19	
3	" "		(♂) ad.	Oyapoc, Cayenne (ex Verdey)	64	62	17	19	
4	" "		(♂) ad.	Bartica Grove, 25. viii. 80.	67	68	18	22	
5	" "		(♂) ad.	Camacusa, 28. vi. 82.	65	67	17½	20	
6	" Berlepsch		(♂) ad.	Bartica Grove, 31. v. 80.	63½	60½	19½	damaged	
7	" "	11828	(♂) ad.	Munduapo, Orinoco, 4. ii. 99.	66	63½	18½	"	
8	" Tring	11870	(♂) ad.	Munduapo, Orinoco, 8. ii. 99.	63	—	17	"	
9	" "	11939	(♂) ad.	Munduapo, Orinoco, 13. ii. 99.	64	61½	16	18	
10	" "		(♂) ad.	La Pricion, Caura, 13. xii. 00.	62½	60½	16½	20	
11	" "		(♂) ad.	La Union, Caura, 20. xii. 00.	63½	62½	17	20	
12	" Brit.		(♂) ad.	"Guiana" (Demerara-make)	65	69	19	23	
13	" "		(♂) ad.	Rio Napo (ex Gould)	65	66	18	21½	Type of <i>C. cinerascens</i> .
14	" "		(♀)	Bartica Grove, 15. xii. 79.	60	65	18	18	
15	" "		(♀)	Camacusa, 27. iv. 82.	59	68	17	23	
16	" "		(♀)	Ourumee, 17. xii. 90.	60½	66½	18	damaged	
17	" "		(♀)	Sarayaçu, E. Ecuador	60	60	—	19	
18	" "		(♀)	" "	62	60	17	18	
19	" "		(♀)	Rio Napo (ex Verreaux)	60	60	17¾	19	
20	" "		♂ juv. in female dress.	Pebas, N.E. Peru, 4. vii. 66.	58	62	17	21	

The males of the above series are quite uniform, having no trace of white on the shoulders. The upper wing-coverts are always clear cinereous, never black as in the following species.

On comparing the types of *C. napensis* and *C. cinerascens* I find that the former differs only in its uniform cinereous wing-coverts, which have distinct white margins in the latter. In the series from British Guiana, however, there is a complete transition between these extremes.

No. 6 agrees with the type of *C. napensis* in having no trace of white markings ; in Nos. 4 and 5 there are faint indications of white edges on some of the middle and greater coverts, and No. 12 shows distinct white margins on all upper wing-coverts. In all other respects the supposed species without margins agrees with the uniform-winged bird. As the types of both *C. napensis* and *C. cinerascens* came from the Rio Napo, there can be no longer any doubt that they belong to one

and the same species. I may remark that in a large series of the allied *C. nigrescens* (Cab. & Heine) the same variation is to be observed. There might be perhaps some uncertainty about the application of the name *C. cinerascens*, for Mr. Sclater, when describing the species, confounded it with the bird here called *C. sclateri*, the ♂ jr. from Chamicurros belonging to that species. As he, however, expressly, states that *F. cinerascens* differs from its Brazilian ally (= *C. brasiliensis* mihi) "*campteriis non albis*," which character refers only to *C. napensis*, it becomes evident that he regarded the Napo specimen as the type. Consequently the name *cinerascens* is to be transferred to the species hitherto called *C. napensis*! This is very unfortunate, but I see no way to avoid this change of **wrongly** "established nomenclature."

The females, referred to above, are very uniform in coloration. There is never any trace of a white shoulder-spot, and the wing-coverts are either uniform or show only very slight buffy-whitish margins on the greater series. One specimen from Pebas (No. 20 of the above list) agrees in every respect with the examples from Eastern Ecuador, and is, no doubt, referable to *C. cinerascens*.

b. C. sclateri nom. nov.

Formicivora cinerascens Sclater, *P. Z. S.* 1857. p. 131 part [excl. descr. et hab. "fl. Napo"] ("in *Peruvia orientali*, Chamicurros": ♂ jr.).

Cercomacra cinerascens (nec Sclater 1857!) Sclater, *Cat. Birds Brit. Mus.* xv. p. 264 part. (descr. et specimens: *g—j* only).

C. caeruleascens (nec Vieillot!) Pelzeln, *Orn. Brasil.* ii. (1868) p. 84.

♂. Differs from that of the foregoing species in having a **distinct white patch on the shoulders**, and the wing-coverts black, with sharply defined white apical spots or margins. The general colour, too, is darker, more schistaceous, especially on the lower surface. Tail-feathers with broad white tips varying in length from 5—9 mm. Graduation of tail 20—24 mm.

Habitat. *N.E. Peru*: Iquitos (Hahnel); Chyavetas and Upper Ucayali (Bartlett); Yurimaguas (Stolzmann); between Moyobamba and Xoberos (coll. Raimondi); Sarayacu (Bartlett); Chamicuros (Hauxwell). *W. Brazil*: Mattogrosso; Salto do Girao and Borba, on the Rio Madeira (Natterer); Cachoeira, near Cuyabá (Smith). *N. Brazil*: Igarapé-Assu, near Pará (Robert).

No.	Collection.	No.	Sex.	Locality and Date.	Wing.	Tail.	Bill.	Graduation of tail.	Remarks.
1	Mus. Berlepsch		♂ ad.	Iquitos, N.E. Peru—Hahnel coll.	68	67	17	22	Type of <i>C. sclateri</i> .
2	" Tring		♂ ad.	Chyavetas, E. Peru, 16. vii. 66.	67	69	17	18½	
3	" "		♂ vix ad.	" " 29. vii. 66.	65½	67	17	20	
4	" Brit		(♂) ad.	" (no date)	64	67	17	22	
5	" "		(♂) ad.	Upper "Ucayali"; E. Bartlett leg.	65	65	18	22	
6	" "		(♂) ad.	Chyavetas:	61	63	17	17	
7	" Vindob.	15346	♂ ad.	Borba, Rio Madeira, 18. vii. 830.	68	72½	18½	24	
8	" "	15345	♂ ad.	" " 3. v. 830.	66	68	18½	20	
9	" "	15343	♂ ad.	Mattogrosso, 3. 11. 826.	65½	68		23	
10	" "	15347	♀ ad.	Borba, 18. vii. 830.	62½	63	17	20	
11	" "	15348	♀ ad.	Salto do Girao, 16. 10. 829.	59½	64	17	19	
12	" Tring	2454	♀ ad.	Igarapé-Assu, Pará, 28. iv. 04.	61	64	17	22	

All the males examined by me agree in the above characters, and are thus readily distinguishable from *C. cinerascens*. Natterer's specimens from Borba and Mattogrosso differ slightly in being of a lighter grey, and some come very near *C. cinerascens* in the paleness of their colour. Yet they are easily known by the white shoulder-patch and the colour of the wing-coverts.

The four females differ from the same sex of *C. cinerascens* in having the shoulder strongly mixed or spotted with white, while it is always uniform olive-brown in the latter species. All the upper wing-coverts, too, show sharply defined white apical margins. As in the ♀ of *C. cinerascens*, the tail-feathers have large white spots and the lower surface is of a dull ochreous-brown.

c. Cercomacra brasiliانا nom. nov.

Cercomacra caeruleascens (nec *Myrmothera caeruleascens* Vieillot!) Scater, *Cat. Birds Brit. Mus.* xv. p. 264 (S.E. Brazil).

♂ ad. Agrees with that of *C. sclateri* in having a **large white shoulder-patch** and the upper wing-coverts margined with white, but differs in the following particulars: the bill is considerably smaller and weaker, the tail much longer and much more graduated; the tail-feathers have only narrow white apical margins (instead of long tips), and the outermost feather of the alula has a very distinct white edge along the outer web. The general colour, too, is much paler grey, quite as pale as in *C. cinerascens*, etc. Graduation of the tail, 35—42 mm.

♀. Quite distinct from the females of *C. cinerascens* and *C. sclateri* in having no white at all on the tail, which is pale olive-brown (not greyish or blackish grey as in its allies). The tail is also longer and much more graduated, the bill narrower and weaker. The under surface is much brighter coloured and more like that of *C. tyrannina* ♀, from which it differs in its much longer and strongly graduated tail. The wing-coverts are uniform olive-brown, and there is no trace of white on the shoulders.

Habitat. *S.E. Brazil*: Rio-make (in coll. Hellmayr, Vindob. et Mus. Brit.); "am Fuss der Serra d'Estrella, Rio" (Ménétriés).

No.	Collection.	No.	Sex.	Locality and Date.	Wing.	Tail.	Bill.	Grada- tion of Tail.	Remarks.
1	Mus. Brit.		(♂) ad.	"Brazil" (ex Wright)—Rio-make.	62	80½	14½	42	
2	" "		(♂) ad.	Rio-make (ex Gould coll.)	60	75	14½	35	
3	" "		(♂) ad.	Rio de Janeiro (ex Fry)	62	80	14	42	
4	Coll. Hellmayr		(♂) ad.	Rio-make	61	76	14	40	Type of <i>C. brasilianna</i>
5	Mus. Vindob.		"♂" juv.	Rio-make	58	71	15	35	
6	" Brit.		(♀) juv.	Rio-make (ex Parzudaki)	58	80	14	43	

Mr. Scater (*Cat. Birds* xv. p. 264), following Ménétriés, called the species *C. caeruleascens* ex Vieillot. This application of the name, however, is erroneous. *Myrmothera caeruleascens* Vieill.* is described from "Guyane," which meant *Cayenne*. If really referable to some species of *Cercomacra*, it can only be intended for the bird I call *C. cinerascens*, which is the only one found in Cayenne. Yet it appears to me highly questionable whether Vieillot's type belonged to the genus

* *Nouv. Diet.* xii. (1817), p. 100.

Cercomacra at all. His measurements, "quatre poncees et demi de longueur totale," correspond with those given by him for *Myrmothera campanella* (= *Hypocnemis cantator*), which is a much smaller bird than any of the *Cercomacra* species in question. Most probably Vieillot had some species of *Myrmotherula* before him, and under these circumstances it seems to me the only way to drop the name *caculescens* altogether. In any case, it is not applicable to the long-tailed *Cercomacra* of S.E. Brazil, for which accordingly I propose the new name *C. brasiliiana*.

The full synonymy of all species of *Cercomacra* will be given in a special paper which I hope to publish shortly.

43. *Pyriglena leuconota* (Spix).

Myiothera leuconota Spix, *Ar. Bras.* i. (1824) p. 72 tab. 72, fig. 2: descr. ♀ ["in confinibus Parae"].

Thamnophilus leuconotus Spix, *l.c.* ii. (1825) p. 28 tab. 39, fig. 2: descr. ♂ ["in sylvis Parae"].

Pyriglena mauro (nec Ménér.) Pelzeln, *Zur Orn. Brasil.* ii. (1868) p. 85 part. (Pará).

P. atra (nec Swainson!) Sclater & Salvin, *P. Z. S.* 1867. p. 576 (Pará); Layard, *Ibis*, 1873. p. 387 (Pará).

Three adult ♂♂ and one ♀, January 17, 18, 20, 24, 1904. A. Robert coll. Nos. 1905, 1918, 1941, 1909.

Iris marked by the collector as "grenat" in the males, "rouge vif" in the female; bill and feet "noir" in the males, "gris bleu" in the female, the feet darker, more blackish.

The female collected by Robert, as well as another from the collection of Professor Steere, agree with the type of the species (Mus. Munich) in having no trace of a pale supraloral streak, this region being uniform blackish grey. The upper surface is dull rufous-brown, and the feathers of the interscapulum are broadly white at the base, this colour being followed by a distinct blackish subterminal bar, as is the case in Spix's type.

The female of *P. leuconota mauro* (Ménér.) from Central Brazil differs at a glance by having a very well-marked whitish supraloral stripe and the back of a paler, more reddish olive-brown colour. The forms of *Pyriglena* will be more fully discussed in my forthcoming paper on the types of Spix.

44. * *Hypocnemis vidua* n. sp.

♀. *H. H. griseiventris* (Pelz.)* dictae similis; sed multo minor rostro debiliore ac brevior, fronte pileo concolore brunnea (nec ferruginea), capitis lateribus pallide griseis (minime ferrugineis), corpore superiore minus rufescente tincto et macula celata interscapulari alba vix conspicua.

Forehead, pileum, and back warm olivaceous-brown, the latter with a slight rufous tinge, some of the interscapular feathers showing a little white on the base; lesser upper wing-coverts like the head, greater and median series and quills dusky, margined with the colour of the back; tertials washed on both webs with olive-brown; primary coverts uniform dusky; tail dark grey on the base, more olivaceous on the outer webs, with a broad blackish subterminal bar and a distinct white apical band. Lores, sides of the head, including superciliary region, pale

* *Ptilys griseiventris* Pelzeln, *Zur Ornith. Brasil.* ii. (1868) pp. 89, 167 (Villa Maria, Engenho do Gama, Borba).

grey. Lower surface pale grey, palest in the middle of the abdomen; throat whitish, flanks washed with brownish; under tail-coverts greyish, more whitish on the tips; axillaries and under wing-coverts pale greyish, quill-lining very indistinctly edged with dull whitish. "Yeux clair (gris), pied gris clair, bec noirâtre." Wing, $62\frac{1}{2}$; tail, 39; tarsus, $21\frac{1}{2}$; bill, 15 mm.*

Type: A. Robert coll. No. 1990. ♀ ad., Igarapé-Assú (Pará), 50 m. elev., February 22, 1904.

This species is nearest *H. griseiventris* (Pelz.), but, as pointed out in the above diagnosis, it differs in much smaller size, shorter and weaker bill, less reddish back, with the white interscapular blotch barely indicated, and especially by having the forehead and sides of the head not pale ferruginous. The former is olive-brown like the occiput, and the latter are clear cinereous like the under-surface. On the other hand, the tail is quite the same in both species, showing a broad blackish subterminal cross-band (of about 6—8 mm. breadth), which is followed by a sharply defined white apical margin (about 2 mm. broad).

The nearest ally of *H. griseiventris* and *H. vidua* is evidently *H. poecilinota*. The female of the latter species, however, is readily distinguished by having broad fulvous terminal margins on the upper wing-coverts, tertials, and interscapulars; the upper wing-coverts are moreover deep black, and there is a band of white spots across the middle of the tail-feathers, besides other differences.

The bill of *H. vidua* is a little different in shape from that of typical *Hypocnemis*, being rather higher and more abruptly flattened towards the base.

Unfortunately Mons. Robert sent only one female of this distinct species. Of the allied *H. griseiventris* also the male is as yet unknown. Nevertheless, there is no doubt that both represent very well-marked species of *Hypocnemis*.

45. *Phlegopsis paraensis* Hellm.

Phlegopsis paraensis Hellmayr, *Orn. Monber.* xii. (April 1904) p. 53 (Pará: coll. Natterer; Mus. Vindob.).

Phlogopsis nigromaculata (nec Lafr. & D'Orbigny!) Sclater & Salvin, *P. Z. S.* 1867, p. 576 (Pará); Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 90 part. (Pará); Sclater, *Cat. Birds Brit. Mus.* xv. (1890) p. 299 part. (spec. *a*, *b*, *e*.).

No. 2169. ♂ ad. Igarapé Assú, Pará, 50 m., May 13, 1904. Al. 91; caud. 56; rostr. $20\frac{1}{2}$ mm.

No. 2173. ♂ ad., same locality, May 14, 1904. Al. $90\frac{1}{2}$; caud. 57; rostr. 21 mm.

"Iris blen foncé" (2169), "grenat" (2173), bill and feet "noir."

These birds are both adult, and exhibit all the differences pointed out by me (*l.c.*). Since describing the species I had an opportunity to compare the series in the British Museum. Specimens *a* and *b* of Sclater's list (*cide supra*) are typical of *P. paraensis*, and specimen *d* belongs also here. It is labelled "Rio Napo, Verdey," but the locality is doubtless erroneous, and from the make of the skin it is evident that it came really from Cayenne, whence Madame Verdey of Paris got many birds.

The seven specimens now examined by me all have small white apical spots, followed by black subapical ones, on the nape, and the tail-feathers show broad sagittate black markings near the tip. In the *Ornith. Monatsberichte* I gave a key to the species of the *P. nigromaculata* group.

* The four types of *H. griseiventris* (Vienna Museum) measure as follows: Wing, 67, 68, 68, 70; tail, 45, 45, 47, 50; bill, $16\frac{1}{2}$, 16, 18, 18 mm.

46. *Formicarius ruficeps amazonicus* Hellm.

Myothera ruficeps Spix, *Av. Bras.* i. (1824) p. 72, tab. lxxii. fig. 1 (Brasilia).]

Formicarius ruficeps amazonicus Hellmayr, *Ornith. Monber.* x. (March 1902) p. 34 (Borba : Natterer coll. : Mus. Vindob.).

One ♂ adult, May 3, 1904. No. 2162. Al. 82; caud. 50; rostr. 20 mm.

This specimen differs from a series of true *F. ruficeps* from S. Paulo and Bahia only in its decidedly darker rufous pileum; the other points of distinction do not hold good. Against my former statement (*loc.*) the back in the Pará specimen is even more greenish than in birds from S.E. Brazil, and the wings are of quite the same colour in both. Perhaps the northern form will turn out to be inseparable when a larger series is available.

As pointed out in my former article (*Orn. Monber.* x. p. 34), the proper name for the red-fronted species is *F. ruficeps* (Spix), of which I examined the type in the Munich Museum. But the black-fronted species must bear the name *Formicarius colma* Bodd. (*Tabl. Pl. enl.* 1783. p. 44), based on D'Aubenton's Pl. 793. fig. 1, which obviously represents the female of the Cayenne form. The female of *F. colma* has always the throat pure white, sharply defined against the sooty grey breast; in *F. ruficeps* the sexes are exactly alike, the throat being black like the sides of the head in both. Only young birds have the throat white, freckled with blackish.

47. * *Conopophaga roberti* Hellm.

Bull. Brit. Orn. Cl. No. cxiv. (March 1905) p. 54.

♂ ad. Top and sides of the head, throat and foreneck black; postocular pencil of elongated feathers silky white; back and upper wing-coverts pale rufous-brown; quills dusky, outer webs and tertiaries pale rufous-brown, rather lighter than the back; tail rather more olive-brown. Sides of the body pale greyish with a slight olivaceous brown admixture on the flanks; middle of the breast and abdomen white; under tail-coverts whitish. Axillaries pale grey with white margins; under wing-coverts whitish, those near the edge of the wing black. Inner edge of the quills very indistinctly dirty greyish white; thighs dark grey with paler tips. Upper mandible black, lower one whitish. Iris "brun-noir," feet "gris-bleu clair." Al. $71\frac{1}{2}$; caud. $39\frac{1}{2}$; rostr. 15 mm.

Type: ♂ ad. Igarapé-Assu (Pará), 50 m., April 4, 1904. No. 2032.

Mons. Robert sent only one male of this interesting species. Its nearest ally is *C. melanogastra*, but the latter is much larger,* with a considerably longer and heavier bill; the back and upper wing-coverts are deep chestnut, and the black of the throat extends over the whole breast, only the abdomen and the flanks being dark grey. *C. aurita* (Gm.) agrees in form and size with *C. roberti*, but differs at a glance in having the top of the head rufous brown and the foreneck bright chestnut-rufous, besides other differences.

The type specimen has slight blackish apical margins on some of the dorsal feathers; these markings, however, are much less apparent than in the allied *C. aurita*.

* Two males of *C. melanogastra* from Borba in the Vienna Museum measure as follows: Al. 81-82; caud. 43-44; rostr. 19-20 mm.

48. *Corythopsis torquata anthoides* (Puch.).

[*Corythopsis torquata* Tschudi, *Arch. Naturg.* 101 (1844) p. 279 (Peru) (see Berl. & Hellm. *Journ. f. Ornith.* 1905. p. 16).]

Muscivapa anthoides Pucheran (ex Cuvier MS.), *Arch. Mus. Paris* vii. (1855) p. 334 (Cayenne).

Corythopsis anthoides Sclater & Salvin, *P. Z. S.* 1867. p. 577 (Pará).

One ♂ ad., April 6, 1904. No. 2036. It agrees in colour and size with topotypical Cayenne skins. The top of the head is dark grey and the back of a dull greenish brown.

49. * *Rhynchocyclus olivaceus* (Temm.).

Platyrrhynchos olivaceus Temminck, *Pl. Col.*, livr. 2 (Sept. 1820) tab. 12. fig. 1 ("Brésil": we accept Bahia as the typical locality).

One ♀ ad. May 7, 1905. No. 2165. "Iris brun-rouge." Al. $71\frac{1}{2}$; caud. 60; rostr. $16\frac{1}{3}$ mm.

This specimen differs from a series of true *R. olivaceus* ex Bahia and Rio in its much smaller size* and in having rather narrower and paler fulvous margins to the upper wing-coverts. Most probably it represents an undescribed subspecies, but I do not like to name it from a single specimen. The species has not before been recorded from the Lower Amazon.

50. *Myiozetetes cayanensis* (Linn.).

Muscivapa cayanensis Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 327 (ex Brisson: Cayenne).

Myiozetetes columbianus (nec Cab. & Heine!) Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 109 (part.; Rio Muriá, near Pará: specimen in Mus. Vindob. examined).

Myiozetes cayanensis Sclater & Salvin, *P. Z. S.* 1867. p. 577 (Pará, August 1848).

One ♂ juv., April 23, 1904. No. 2130. "Iris brown, feet and bill black."

This bird is typical of *M. cayanensis*, to which species the specimen of Natterer's, recorded by Von Pelzeln s.n. *M. columbianus*, also belongs.

51. *Myiarchus tuberculifer* (Lafr. & Orb.).

Tyrannus tuberculifer Lafresnaye & Orbigny, *Syn. Av.* i. in *Mag. Zool.* 1837. vol. ii. p. 43 (Guarayos, East Bolivia).

Myiarchus tricolor Pelzeln, *Zur Orn. Brasil.* ii. (1868) p. 182 (Rio & Sapitiba, S.E. Brazil).

Myiarchus sp., Sclater & Salvin, *P. Z. S.* 1867. p. 578 (Rio Tocantins).

One ♀ in moult, January 23, 1904. No. 1939.

It agrees perfectly with the male type of *M. tricolor*, having the cap sooty blackish and the abdomen very pale yellow. About the nomenclature of this species see my forthcoming paper "On little known types in the British and Paris Museums."

52. *Empidonomus varius* (Vieill.).

Muscivapa varia Vieillot, *Nour. Dict.* xxi. (1818) p. 458 (ex Azara No. 187: Paraguay).

Empidonomus varius Layard, *Ibis*, 1873. p. 383 (Pará); Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 117 (Pará).

One ♂, January 21, 1904. No. 1921. Agreeing with a series from South Brazil and Bahia. Topotypical Paraguay skins were not available for comparison.

* Two males from Bahia measure: al. 75, 79; caud. 68, 73 mm.

One male from Rio: al. 78; caud. 71 mm.

One female from Bahia: al. 71; caud. 66 mm.

Five unsexed specimens, Bahia: al. 77-79½; caud. 70-72 mm.

53. *Pipra opalizans* Pelz.

Pipra opalizans Pelzeln, *Zur Ornith. Brasil.* ii. (1868) pp. 128, 186 descr. orig. ♂ (Pará) : Berlepsch *Ibis*, 1898. p. 60, tab. 2 (♂ ad.) (Ourem on the River Guamá) : Hellmayr, *Verhandl. Zool.-Bot. Gesellsch. Wien* (1903) p. 201 (descrip. ♀).

1. ♂ ad., April 19, 1904. No. 2115. "Iris blanc-argent, pied jaune clair, bec bleu blanchâtre." Wing, 53; tail, $26\frac{1}{2}$; bill, 10 mm.

2. ♀ ad., April 7, 1904. No. 2038. "Iris blanc-jaune, pied jaune, bec violet en dessus, violacé en dessous." Wing, $53\frac{1}{2}$; tail, 30; bill, 10 mm.

3. (♀) ad., April 7, 1904. No. 2041. "Iris brun, pied blanc-jaune, bec violet en dessus, blanc soie en dessous." Wing, 54; tail, 26; bill, 10 mm.

No. 1 is a perfectly adult male, and agrees in every respect with the description and figure in the *Ibis*. The females are also absolutely identical with the specimen described by me *l.c.*

P. opalizans is evidently confined to the faunal region of Pará. As yet only five specimens are known : one ♂ in Count Berlepsch's collection, one ♂ and three ♀♀ in the Tring Museum. It seems that the species is by no means rare near Pará since M. A. Robert, who was chiefly engaged in collecting mammals, could get three specimens within a few days.

54. *Pipra leucocilla* Linn.

Pipra leucocilla Linnaeus, *Mus. Ad. Fred.* ii. Prodr. (1764) p. 23 (loc. ign. : we substitute *Saracana*). Sclater & Salvin, *P. Z. S.* 1867. p. 589 (Pará) : Layard, *Ibis*, 1873. p. 384 (Pará).

One ♂ juv., coloured like a female, March 13, 1904. No. 2009. "Iris grenat."

The Tring Museum possesses also two ♂♂ ad., collected by Prof. Steere near Marguary and Benevides in July 1879.

55. *Tityra cayana* (Linn.).

Lanius Cayanus Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 137 (ex Brisson : "*Cayania*").
Tityra cayana Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 119 (Pará : one ♀ in Mus. Vindob. : spec. examined) ; Sclater & Salvin, *P. Z. S.* 1867. p. 578 (Pará).

♀ ad., 15. iv. 1904. No. 2086. "Iris brun."

The Tring Museum possesses also a pair, collected by Prof. Steere, in the vicinity of Pará. These three specimens as well as the female in the Vienna Museum (coll. Natterer) are typical *T. cayana*, only the apical third or half of the bill being black ; the females are pure ashy grey on the upper surface, not at all washed with brownish, and the top and sides of the head are uniform black without any white streaks.

It seems, however, that *T. brasiliensis* (Sws.) also occurs near Pará. I have examined one female in the Vienna Museum, which I cannot distinguish from females ex Rio, S. Paulo, etc. The head is all over striped with black and white, the back strongly suffused with pale brownish and the bill almost entirely black, except at the base.

I cannot believe that two forms so nearly allied as *T. cayana* and *T. brasiliensis* should occur side by side, and I trust further researches on the Lower Amazon will prove that mighty river to separate their ranges.

I may add that *T. intermedia* Cab. & Heine* is apparently based upon females

* *Museum Heinan.* ii (1850) p. 81. Pará.

of *T. brasiliensis*. It is said to differ from the latter in its rather narrower and differently-coloured bill. As a matter of fact, however, the ♀ from Pará in the Vienna Museum agrees in both these respects with ordinary females from South Brazil, while one from Barra do Rio Negro and another from Mattogrosso show that colour of the under mandible as described by Prof. Cabanis, the basal third and the tip being yellowish, only the middle portion black. Yet I do not attach much importance to this difference, as from the same locality (Engenho do Gama in Mattogrosso) there is a female with the bill coloured as usual.

56. *Lathria cinerea* (Vieill.).

Ampelis cinerea Vieillot, *Nour. Dict.* viii. (1817), p. 162 (Cayenne).

Lipangus cineraceus Scater & Salvin, *P. Z. S.* 1867, p. 579 (Pará).

Four ♂♂, 18. i., 20. i., 2. ii., 4. ii. 1904. Nos. 1908, 1917, 1957, 1962. "Iris brun," in one marked "grenat."

These skins are not different from specimens from Cayenne and British Guiana. Berlepsch and Hartert* have already observed that the so-called *L. plumbea* ex Bahia cannot be separated.

57. *Lipangus simplex* (Licht.).

Muscicapa simplex Lichtenstein, *Verz. Dobl.* (1823), p. 53 (Bahia).

Lipangus simplex Pelzeln, *Zur Ornith. Brasil.* ii. (1868) p. 123 (Pará).

One ♂ ad., April 26, 1904. No. 2146. "Iris brun."

It agrees with specimens from British Guiana, Bogota coll., and the Orinoco region. A skin from Bahia (true *L. simplex*) differs in the less pure, schistaceous colour above, which shows a decided olive wash, and in the greenish tint of the lower parts.

L. immundus Scl. & Salv. does not belong to this genus, and will be discussed by me on a future occasion.

58. *Xipholena lamellipennis* (Laf.).

Ampelis lamellipennis Lafresnaye, *Mag. Zool.* (1839), tab. 9 ("l'Amérique du Sud"—we substitute Pará as typical habitat).

Xipholena lamellipennis Scater & Salvin, *P. Z. S.* 1867, p. 580 (Pará); Pelzeln, *Zur Orn. Bras.* ii. (1868), p. 133 (Pará).

One ♂ ad., 18. iv., one ♂ juv., 15. iv., one ♀, 27. iv. 1904. Nos. 2043, 2087, 2147. "Iris jaune" or "jaune-blanc."

This beautiful species is evidently confined to the faunal region of Pará.

59. *Haematoderus militaris* (Lath.).

Coracias militaris Latham, *Ind. Ornith. Suppl.* (1801) p. xxvii ("Cayana").

Haematoderus militaris Scater & Salvin, *P. Z. S.* 1867, p. 580 (Cametá); Pelzeln, *Zur Orn. Bras.* ii. (1868) p. 134 (Pará).

One ♂, 18. iv. 1904. No. 2110. "Iris brun." Wing, 203; tail, 132; rostr. 30½ mm. This specimen agrees with another from Cayenne in having the nape, back, and wings black, only the head and the lower surface being red, but differs from it in decidedly shorter wings and in the much paler (rosy red instead of dark

* *Nor. Zool.* ix. (1902), p. 57.

crimson) colour underneath. I suppose that the birds with black back are really the old females, and those described by Mr. Selater as being "above sooty brown" are young ones.

Perhaps the Pará form could be separated subspecifically. More material, however, is required to settle the question.

60. *Momotus momota parensis* Sharpe.

[*Ramphastos Momota* Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 152 (ex Edwards et Brisson excl. syn.

Marcgrave : *Cayenne* accepted as terra typica —ex Brisson).]

M(momotus) parensis Sharpe, *Cat. Birds Brit. Mus.* xvii. (1892) p. 320 (Pará).

Momotus brasiliensis Selater & Salvin, *P. Z. S.*, 1867. p. 581 (Pará) : Pelzeln, *Zur Ornith. Brasil.* i. (1867) p. 19 (part. : Pará).

♂ ad., ♀ ad., May 14, 1904. Nos. 2171, 2172. "Iris grenat."

These specimens fully bear out the distinctive points assigned by Dr. Sharpe to his *M. parensis*. They differ from a good series of *M. momota* from Cayenne, British Guiana, and the Orinoco region by their smaller size and in having the whole lower surface bright ochreous-cinnamon, only the under tail-coverts and the sides of the foreneck and chest being suffused with greenish. In *M. momota* the underparts are pale green, but a few specimens show a cinnamon wash on the throat and foreneck.

Both skins from Pará have the middle pair of tail-feathers spatulated, and the deep chestnut nuchal patch is very well developed. This latter peculiarity alone would suffice to tell them from *M. m. ignobilis* Berl.

Their measurements are the following:—

♂. Wing, 139 ; tail, 249 ; bill, 42 mm.

♀. Wing, 137 ; tail, 235 ; bill, 40½ mm.

61. *Galbula cyanicollis* Cass.

Galbula cyanicollis Cassin, *Proc. Acad. Philad.* v. (1852) p. 154, tab. 7 (Pará, Brazil).

G. cyanicollis Selater & Salvin, *P. Z. S.*, 1867, p. 582 (Capim River).

G. cyanicollis Pelzeln, *Zur Ornith. Brasil.* i. (1867) p. 24 (Tapajoz, Pará).

Two ♀ ♀, April 7 and 8, 1904. Nos. 2039, 2045.

"Iris bleu-noir ; pied jaune ; bec noir et jaune."

The ♀ of the present species differs from that of *G. albivestris* in having the crown and the cheeks violaceous-blue (instead of the former being coppery red and the latter bronzy green) and the lower surface of a decidedly paler cinnamon fulvous colour.

The Tring Museum received some years ago one ♂, collected by Professor Steere near Marea de Legua, Pará.

62. *Bucco tectus* (Bodd.).

Bucco tectus Boddaert, *Tabl. Pl. enl.* (1783) p. 43 (ex Daubenton, 688, fig. 2—Cayenne) : Pelzeln,

Zur Ornith. Brasil. i. (1867) p. 21 (Pará) ; Selater & Salvin, *P. Z. S.*, 1867, p. 582 (Pará) ;

Layard, *Ibis*, 1873, p. 391 (Pará).

One ♀ ad., April 21, 1904 : two young birds, both marked "♂," April 21, 1904. Nos. 2119, 2117, 2118. "Iris bleu-noir."

The adult specimen is not different from a ♂ from Surinam, except in being a little larger and having a somewhat stronger bill. In both only the forehead is minutely spotted with white.

63. *Monasa morphoeus* (Hahn).

Bucco morphoeus Hahn, *Vögel aus Asien, etc.*, Lief. xiv. (1823) tab. 2 (Brasilien).

Monasa leucops Pelzel, *Zur Ornith. Brasil.* i. (1867) p. 22 (Pará).

Two ♂♂ and two ♀♀, 13. ii., 15. iv., 26. iv. 1904. Nos. 1970, 2090, 2145, 2144. "Iris brun, brun-ronge, brun-noir."

Besides, there are two specimens (♂, ♀), collected by Steere near Pará, in the Tring Museum. This series agrees, in the extent of the creamy white on the forehead and chin, with typical specimens from Bahia.

M. m. peruana Schl. is but a poor subspecies, only distinguishable by the lesser amount of white on forehead and chin, but some specimens are hardly different.

64. *Nyctidromus albicollis* (Gm.).

Cuprimodgus albicollis Gmelin, *Syst. Nat.* 1. ii. (1788) p. 1030 (ex Latham—*Cayenne*).

Nyctibius albicollis Pelzel, *Zur Orn. Bras.* i. (1867) p. 13 (part., Pará, etc.) ; Layard, *Ibis*, 1873, p. 389 (Pará).

One ♀ jr., taken 30. iv. 1904. No. 2157. "Iris bleu." Wing, 149 ; tail 140 mm. This specimen belongs to the smaller, typical form. The birds from Central and Southern Brazil average larger, especially the tail is considerably longer. They ought to be called *N. a. derbyanus* Gould.

65. *Thalurania furcata furcatoides* Gould.

[*Trochilus furcatus* Gmelin, *Syst. Nat.* 1. i. (1788) p. 486 (ex Brisson : *Cayenne*, excl. syn. Sloane & Marcgrave).].

Thalurania furcatoides Gould, *Introd. Trochil.* (1861), p. 77 ("Pará and the lower part of the Amazon") ; Slater & Salvin, *P. Z. S.* 1867, p. 584 (Pará) ; Layard, *Ibis*, 1873, p. 388 (Pará).

Thalurania furcata (nec Gmelin !), Pelzel, *Zur Orn. Bras.* i. (1867) p. 30 (Barra do Rio Negro).

Five ♂♂ ad. and juv., 26. i., 5. ii., 12. ii., 16. ii., 2. iv. 04. Nos. 1943, 1964, 1969, 1985, 2027.

Two ♀♀, 22. i., 12. ii. 04. Nos. 1934, 1968.

The males, like two others collected by Steere in the vicinity of Pará, have the under tail-coverts broadly margined with white. The specimens from Manáos in the Vienna Museum (coll. Natterer) belong also to *T. f. furcatoides*.

66. * *Heliothrix auriculatus phainolaema* Gould.

[*Trochilus auriculatus* Nordmann in *Erman's Reise* (1835) p. 5. tab. ii. f. 1 (♂), 2 (♀) (Rio Janeiro, cf. *l.c.* p. 5).]

Heliothrix phainolaema Gould, *P. Z. S.* 1855, p. 87 ("Rio Napo"—errore !).

One ♂ in adult plumage, but with the tail-feathers still somewhat elongated, February 13, 1904. No. 1973. "Iris noir." Al. 63, caudae rect. med. 54, ext. 36½, rostr. 21 mm.

This specimen is very interesting, proving as it does that *H. phainolaema* is by no means merely an individual variety of *H. auriculatus*, as considered by Simon and Hartert, but a perfectly valid subspecies, which, like several other forms, is evidently confined to the Pará region. I compared our specimen with the type of *H. phainolaema*, from which it only differs by its much longer bill. The type is a perfectly adult male, having the tail-feathers short and broad, as is also the case with the adult males of *H. auriculatus*.

Both specimens differ from a large series of the latter (24 ♂♂) in having the whole throat to the foreneck glittering green, there being no trace of the white stripe along the middle of the throat, which is always very conspicuous in the males of *H. auriculatus*.

There can no longer be any doubt that *H. a. phainolaema* represents a distinct subspecies. I may remark that the label of the type-specimen bears the locality "Pará" in Gould's own handwriting, but this is scratched out and replaced by "Napo." The type of *Heliothrix phainolaema* is of exactly the same make as some specimens of *Phaethornis pygmaeus* (Spix), labelled by Gould as coming from Pará, and I believe it came really from there, but the locality, by some mistake of Gould's, has been altered afterwards on the label.

Gould's type measures as follows: Wing 61, central tail-feathers 40, the outermost 33; bill 16 mm.

According to my views, we have to distinguish two forms:

1. *Heliothrix auriculatus auriculatus* Nordm.

Chin and a broad stripe on each side of the throat glittering-green, the whole middle of the throat pure white, like the rest of the underparts. Wings 66—70 mm.

Hab. S.E. Brazil, from Paraná and S. Paulo in the south, northwards to Goiaz and Bahia.

2. *Heliothrix auriculatus phainolaema* Gould.

Chin and entire throat glittering-green, with no white at all. Wings 61—63 mm.

Hab. N.E. Brazil; vicinity of Pará, on the mouth of the Amazons.

67. *Piaya cayana* (Linn.).

[*Cuculus cayanus* Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 170 (ex Brisson: Cayenne).]

Piaya cayana Sclater & Salvin, *P. Z. S.* 1867. p. 585 (Pará); Pelzeln, *Zur Orn. Bras.* iii. (1869) p. 272 (Pará); Layard, *Ibis*, 1873. p. 393 (Pará).

One ♂, not quite adult, 4. iii. 1904. No. 2014. "Iris grenat." Wing 140, tail 266, rostr. 31 mm.

This specimen agrees in dimensions and colour with an example from Cayenne, the lower parts being very pale, almost whitish, the under tail-coverts hardly darker. It differs from the Cayenne skin only in having the upper surface decidedly paler, less mixed with rufous. Specimens from Surinam and the Orinoco region have the lower parts slightly greyer, and the under tail-coverts much darker, often blackish grey. The latter character is quite sufficient to recognise them at once. This latter form ought to be called *P. c. guianensis* (Cab. & Heine).

P. c. cabanisi Allen has the crissum still darker, pure black, and is much larger.

68. *Neomorphus geoffroyi* (Temm.).

Coccyzus geoffroyi Temminck, *Pl. Col.* livr. 2 tab. 7 (1820: no locality given. We substitute Bahia, E. Brazil ex Wied).

Neomorphus geoffroyi Pelzeln, *Zur Orn. Brasil.* iii. (1869) p. 271 (Pará).

One adult marked "♀," February 25, 1904. No. 1999. "Yeux jaunes et oranges; pied bleu clair gris, bec en dessus noir clair et vert, verdâtre en dessous."

The description given by Shelley* refers to the immature bird only. In the

* *Cat. Birds Brit. Mus.* xix. p. 416.

adult bird there is no trace of rufous-buff bars on the neck and back, these parts being uniform metallic green.

The above specimen measures as follows : Wing 162, tail 275, bill 44 mm.

69. *Tapera* * *naevius* (Linn.).

Cuculus naevius Linnaeus, *Syst. Nat.* xii. 1. (1766) p. 170 (ex Brisson : Cayenne).

Diplopterus naevius Selater & Salvin, *P. Z. S.* 1867. p. 585 (Mexiana) ; Layard, *Ibis*, 1873 p. 392 (Pará).

One specimen marked "♂," April 11, 1904. No. 2046. "Iris jaune."

70. *Crotophaga ani* Linn.

Crotophaga Ani Linnaeus, *Syst. Nat.* x. (1758) p. 105 (ex Maregrave, etc. As typical locality, accepted *Eastern Brazil*, ex Maregrave) ; Selater & Salvin, *P. Z. S.* 1867. p. 585 (Mexiana) ; Layard, *Ibis*, 1873. p. 392 (Pará).

One ♀, April 18, 1904. No. 2112. "Iris noir."

71. *Ramphastos erythrorhynchus* Gm.

Ramphastos erythrorhynchus Gmelin, *Syst. Nat.* 1. i. (1788) p. 355 (ex Brisson & Edwards—"in America Australi.")—The description is evidently taken from Brisson. We accept, therefore, *Cayenne* as the typical locality ex Brisson.

R. haematorhynchus Berlepsch & Hartert, *Nov. Zool.* ix. (1902) p. 99 (Caura River, in Venezuela).

R. erythrorhynchus Selater & Salvin, *P. Z. S.* 1867. p. 585 (Pará) ; Pelzeln, *Zur Orn. Brasil.* iii. (1869) p. 233 (Pará).

Three ♂♂ and one ♀, 29. i., 6. ii., 24. ii., 28. ii. 1904. Nos. 1951, 1965, 1994, 2006. Culminal stripe and basal band of upper mandible "jaune-vert," base of lower mandible "bleu ciel," rest of bill "rouge foncé" or "brun-rouge." In addition to the specimens sent by Mons. Robert there is in the Tring Museum a pair collected by Professor Steere near Pará.

The series from Pará agrees with the type of *R. haematorhynchus* from the Caura River in having the bill of a dark sanguineous red colour, which is very different from the clear fiery or orange-red colour as shown by examples from British Guiana. This difference has been well pointed out by Messrs. Berlepsch and Hartert, who named the dark-billed form *R. haematorhynchus*. In the meantime, however, the Tring Museum has received a series of skins from Cayenne and Surinam which must be considered to be the typical *R. erythrorhynchus*. These specimens now turn out to belong to the dark-billed form, which consequently has to bear Gmelin's specific name, while that from British Guiana would require a new one.

N.B. In the *Cat. Birds* xix. p. 128, Mr. Selater, among the synonyms of *R. erythrorhynchus*, quotes also *R. levaillantii* Wagl. The latter name is exclusively based on Levaillant's Plate III., which represents a bird with an ochreous breast-band and with the upper and under tail-coverts of the same colour. Very likely it is a fictitious bird ; at any rate it cannot be referred to *R. erythrorhynchus*, which has the breast-band as well as the crissum bright scarlet, and the upper tail-coverts clear sulphur-yellow.

* Cf. Lönnberg, *Ibis* (3), ii. (1903) p. 239.

72. *Rhamphastos ariel* Vig.

Zoolog Journ. ii. (1826) p. 466 (Rio de Janeiro Mus. Vigers).

Rhamphastos arai Sclater & Salvin, *P. Z. S.* 1867. p. 585 (Pará) : Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 234 (Pará, Cajutuba).

Four specimens, three of which are marked ♂, the fourth ♀, but which in all probability is also a male, for it agrees in dimensions and size of the bill with undoubted males. They were all taken at Igarapé-Assu on the following dates :— ♂♂, 19. ii., 22. ii., 3. v.; ♀, 22. i. 1904. Nos. 1987, 1991, 2164, 1929. These specimens agree in every respect with others from Espírito Santo and Bahia, having the upper tail-coverts bright scarlet and the cheeks, throat and foreneck uniform orange, the latter being followed by a narrow sulphur-yellow cross-band. The whole chest is bright scarlet.

73. *Pteroglossus aracari* (Linn.).

Ramphastos Aracari Linné, *Syst. Nat.* x. (1758) p. 104 * (based on Maregrave, *Hist. Nat. Bras.* p. 217: "Aracari," N.E. Brazil).

Pteroglossus wiedii Sturm, *Monogr. Rhamphast.* 1847. part iv. (Rio Janeiro, St. Paul, etc. : coll. Natterer).

P. aracari Sclater & Salvin, *P. Z. S.* 1867. p. 586 (Capim River).

P. Wiedii Pelzeln, *Zur Orn. Bras.* iii. (1869) p. 235 (Rio Muriá).

Two specimens, both marked ♂, but one probably a female, having a much smaller and weaker bill. They belong to the form with narrow black culminal stripe, and agree with a specimen from Pernambuco (typical *aracari*). Examples from S. Paulo are also not different.

Nos. 1995, 2101. 24. ii., 16. iv. 1904. "Iris bleu ciel : pied vert foncé : bec noir et jaune-blanc."

74. *Selenidera gouldii* (Natt.).

Pteroglossus gouldii Natterer, *P. Z. S.* 1837. p. 44 ("Pará in Brazil").

Selenidera gouldi Sclater & Salvin, *P. Z. S.* 1867. p. 586 (Pará) ; Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 238 (Borba, Pará) ; Layard, *Ibis*, 1873. p. 393 (Pará).

One ♀, 13. v. 1904. No. 2170. "Iris jaune-vert : pied vert clair ; bec noir et vert clair, en dessous bleu pâle, noir, vert clair."

75. *Campephilus trachelopyrus* (Malh.).

Megapicus trachelopyrus Malherbe, *Mém. Soc. d'Hist. Nat. Moselle* (1857) p. 1 ("Pérou").

Campephilus trachelopyrus Sclater & Salvin, *P. Z. S.* 1867. p. 586 (Capim River) : Pelzeln, *Zur Ornith. Bras.* iii. (1869) p. 242 (Pará) ; Layard, *Ibis*, 1873. p. 390 (Pará).

Two ♂♂ and two ♀♀, all more or less moulting, but otherwise in perfect plumage : 16, 23, 24. ii. 1904. Nos. 1986, 1993, 1996, 1997. "Iris jaune."

In addition to these I have one pair collected by Professor Steere near Pará. This series agrees in coloration perfectly with some specimens from Central Peru, but the latter are considerably larger and have a more powerful bill. Perhaps the

* Although Linné quotes first Edwards, pl. 64, which represents a discoloured specimen of *Rhamphastos piscivorus*, his description refers exclusively to *P. aracari* as described by Maregrave: "Rostrum nigro : maxilla superiore lateribus alba, basi triloba." Maregrave's birds came from S.E. Brazil, thus *P. wiedii* Sturm, becomes a synonym of *P. aracari* Linn.

form of Pará can be separated subspecifically. My series of Peruvian skins is, however, too small to settle the question definitely.

It is very remarkable that near Pará *C. trachelopygus* is found instead of the Guianan *C. rubricollis*, which we should expect to occur there.

Measurements of specimens from Peru : -

♂ ad., Pozuzo, C. Peru. Wing 194 ; tail 135 ; bill 45 mm.

Two ♀ ♀ ad., Pozuzo and Chuchurras, C. Peru. Wing 190, 193 ; tail 134, 135 ; bill $46\frac{1}{2}$, 47 mm.

Measurements of specimens from Pará : -

♂ ad., Benevides (Steere coll.). Wing 174 ; tail 120 ; bill 44 mm.

Two ♂♂, Igarapé-Assú (Robert coll.). Wing * 170, 185 ; tail 119, 120 ; bill $42\frac{1}{2}$, $44\frac{1}{2}$ mm.

♀ ad., Marguary (Steere coll.). Wing 180 ; tail 129 ; bill 43 mm.

Two ♀ ♀, Igarapé-Assú (Robert coll.). Wing * 171, 175 ; tail 120, 122 ; bill 44, 45 mm.

76. *Chloronerpes flavigula* (Bodd.).

Picus flavigula Boddaert, *Tabl. Pl. enl.* (1783) p. 49 (ex Daubenton, *Pl. enl.* 784 : Cayenne).

Chloronerpes flavigula Pelzeln, *Orn. Brasil.* iii. (1869) p. 244 (Pará).

Chloronerpes flavigularis Selater & Salvin, *P. Z. S.* 1867. p. 587 (Pará).

One ♂ ad., April 27, 1904. No. 2151. "Iris brun." Not different in any way from a series of the Orinoco region and some examples from British Guiana.

77. *Celeus jumana* (Spix).

Picus jumana Spix, *Ar. Bras.* i. (1824) p. 57, tabl. 47 ("in sylvis flum. Amazonum").

Celeus jumana Selater & Salvin, *P. Z. S.* 1867. p. 586 (Pará) ; Pelzeln, *Zur Orn. Brasil.* ii. (1869) p. 251 (Pará, Rio Muriá) ; Layard, *Ibis*, 1873. p. 390 (Pará).

One ♂, three ♀ ♀, 24. iv., 26. iii., 2, 3. v., 1904. Nos. 2136, 2022, 2161, 2163. "Iris brun, brun-rouge, or grenat."

Only one female has the upper tail-coverts pale greenish yellow ; in the others they are more or less washed with chestnut-rufous on the tips. The inner webs of the quills, however, are always strongly barred with dusky.

78. *Pyrrhura perlata* (Spix).

Aratinga perlatus Spix, *Ar. Bras.* i. (1824) p. 35, tab. xx. fig. 1 (♂), 2 (♀) ("in sylvis fluminis Amazonum adjacentibus").

Conurus perlatus Selater & Salvin, *P. Z. S.* 1867. p. 588 (Capim River) ; Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 259 (Pará).

One ♂, nearly adult, 22. iv. 1904. No. 2122. "Iris brun."

♀ junior, without date and number.

I examined also one ♂, collected by Steere near Pará, and three (2 ♂♂, 1 ♀) specimens of Natterer's. All these six examples differ from Spix's types in lacking the brownish red frontal edge, and in having the cheeks bluish (not yellowish green), but the differences are very slight and probably due to individual variation.

* Although moulting, the longest primaries are full grown, and the length of the wings is thus reliable.

79. *Brotogeris tuipara* (Gm.).

Psittacus tuipara Gmelin, *Syst. Nat.* 1. i. (1788) p. 348 (ex Brisson ex Marcgrave : N.E. Brazil *).

Brotogeris tuipara Pelzeln, *Zur Orn. Brasil.* iii. (1869) p. 261 (Pará).

B. notatus Sclater & Salvin, *P. Z. S.* 1867. p. 588 (Pará).

B. tuipara Layard, *Ibis*, 1873 p. 394 (Pará).

One ♀, 25. ii. 1904. No. 2002. "Iris blanc argenté."

One ♂ without number and date.

This species is hitherto only known to occur on the Lower Amazon from Pará to Manaus.

80. *Pionus menstruus* (Linn.)

Psittacus menstruus Linnaeus, *Syst. Nat.* xii. 1 (1766) p. 148 (ex Brisson : Guiana sc. *Cayenne* — et Edwards, loc. ign.).

Pionus menstruus Sclater & Salvin, *P. Z. S.* 1867. p. 588 (Rio Tocantins).

Pionus menstruus Pelzeln, *Zur Orn. Brasil.* iii. (1869) p. 264 (Cajutuba).

One ♂, 29. iv. 1904. No. 2155. "Iris-brun."

81. *Pionus fuscus* (P. L. S. Müll.)

Psittacus fuscus P. L. S. Müller, *Nat. Syst. Suppl.* (1776) p. 78 (ex Buffon & Edwards : Cayenne).

Pionus violaceus Sclater & Salvin, *P. Z. S.* 1867. p. 588 (Pará) : Pelzeln, *Zur Orn. Brasil.* iii. (1869) p. 264 (Pará).

Two ♂♂, 22. i., 13. iv. 1904. Nos. 1931, 2050. "Iris brun" and "brun-rouge."

They are not different from Surinam skins.

82. *Gypopsitta vulturina* (Kuhl).

Psittacus vulturinus Kuhl, *Consp. Psitt.* (1820) p. 62 (Pará).

Caica vulturina Sclater & Salvin, *P. Z. S.* 1867. p. 588 (Pará).

♂ ad., 3. iv. 1904. No. 2031. "Iris orange." Wing 152, tail 72, culm. 22½ mm.

♀ ad., 5. iii. 1904. No. 2016. "Iris orange rougeâtre." Wing 144, tail 65, culm. 20½ mm.

♀ ad., 29. iii. 1904. No. 2024. "Iris orange." Wing 148, tail 63, culm. 22 mm.

These specimens are quite adult, with the head all round naked. The bare skin on the head is black except the forehead and a rim round the eye, which are yellowish flesh-coloured. The only difference between the sexes seems to consist in the greater amount of red on the thighs in the male bird. The latter is also rather larger.

83. *Pionites† leucogaster* (Kuhl).

Psittacus leucogaster Kuhl, *Consp. Psitt.* (1820) p. 70 (Brasília).

Pionias leucogaster Pelzeln, *Zur Orn. Bras.* iii. (1869) p. 264 (Pará).

Three adults (1 ♂, 2 ♀), 13. iv., 2. v. 1904. Nos. 2049, 2160, one without number.

One juv. ♀, 22. iv. 1904. No. 2123.

* I am not quite sure whether Marcgrave's description really refers to the bird, commonly called *B. tuipara*. The latter is hitherto only known from the Lower Amazon, where Marcgrave never collected.

† Count Salvadori (*Cat. Birds* xx. p. 358) clearly pointed out that the generic name *Caica* cannot be used for *Psittacus melanocephalus*, being a mere synonym of *Brotogeris*. Therefore *Pionites* Heine should be accepted.

Iris marked as "jaune-orange" and "grenat," "brun" in the young.

These specimens, as well as an old male, collected by Steere at Benevides, have the thighs bright green and no yellow on the tail; the ♂ ad. shows only slight yellow margins on the tips of the two outer tail-feathers.

P. leucogaster seems to be strictly confined to the vicinity of Pará, at least it is not known to occur farther west. On the great southern affluents of the Amazons *P. xanthomerus* (Scl.) takes its place.

84. *Deropterus accipitrinus fuscifrons* n. subsp.

[*Psittacus accipitrinus* Linnaeus, *Syst. Nat.* xii. 1 (1766) p. 148 (ex Edwards, Brisson, etc.—"in India"—errore! We substitute *Cayenne* as typical locality).]

Psittacus accipitrinus (nec Linné) Spix, *Ac. Bras.* i. (1824) p. 44. tab. xxxii. (Villa Nova—specimen examined).

Pionius accipitrinus Pelzel, *Zur Ornith. Brasil.* iii. (1869) p. 265 (part.: Pará—specimen examined).

♂ ad., 19. iii. 1904. No. 2020. "Iris jaune."

♀ ad., 3. ii. 1904. No. 1961. "Iris jaune-vert."

♀ jr., 21. iii. 1904. No. 2021. "Iris jaune."

In addition to the above, there is in the Tring Museum an adult ♂, collected by Steere at Benevides, near Pará. I compared also two specimens in the Munich Museum, one of which was taken near Villa Nova, on the mouth of the Amazon, and figured by Spix, *l.c.* The other, collected by Natterer near Pará, was obtained in exchange from the Vienna Museum.

These six specimens differ from typical *D. accipitrinus*, of which a series of twenty-three skins has been compared,* in lacking the coppery or rosy red patches on the base of the outer tail-feathers and in having the whole forehead and crown uniform dusky or only slightly mottled with brownish white. The ground-colour of the sides of the head, too, is considerably darker brown. There seems to be no difference in size between the two forms. The above difference being quite constant, I propose to call the *Pará* form

Deropterus accipitrinus fuscifrons n. subsp.

Similis *D. a. accipitrino* (Linn.), sed margine frontali multo obscuriore (nigricante nec fumoso), pileo fusco-brunneo maculis sordide albescentibus sparsim variegato (minime omnino albido), fundo in lateribus capitis saturatiore necnon rectricibus lateralibus absque macula basali cuprea primo visu distinguendus.

Habitat: Ad ripas fluminis *Amazonum* inferioris prope pagos *Pará* et *Villa Nova* dictos.

Typus in Mus. Tring: ♂ ad., Igarapé-Assú, Pará, 50 m, March 19, 1904. A. Robert coll., No. 2020.

I examined in the British Museum the specimens from Maranhão and Sarayaçu in East Ecuador, and found them identical with my new form. Salvadori already stated the differences. The locality "Sarayaçu," however, seems to me to be very doubtful.

* 2 Cayenne—Mus. Monac.; 6 River Tacutu and R. Essequibo—Mus. Berlepsch and Tring; 2 Caura R., Venezuela—Mus. Tring; 1 Manaos—Mus. Vindob.; 2 Rio Negro—Mus. Vindob.; 1 Surinam—Mus. Vindob.; 2 without locality—Mus. H. v. B. et Tring; 7 from Brit. Guiana in Mus. Brit.

85. *Pipile cujubi* (Pelz.).

Penelope cujubi Pelzeln, *Sitz. Ber. Akad. Wien* xxxi. (1858) p. 328 (Pará); Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 284 (Pará).

One ♂ ad., taken February 25, 1904. No. 1998. "Iris rouge-brun."

As far as I know, it is the second specimen of this extremely rare species, shot in a wild state. *P. cujubi* is strictly confined to the Pará region, where it apparently takes the place of *P. jacutinga* (Spix). It differs from the latter in lacking the black forehead and superciliary stripe, and in having the wing-coverts but broadly margined with white exteriorly (instead of being for the greater part white). The white margins of the lower parts, so conspicuous in *P. jacutinga*, are but faintly indicated on the foreneck.

86. *Odontophorus gujanensis* (Gm.).

Tetrao gujanensis Gmelin, *Syst. Nat.* 1. ii. (1788) p. 767 (ex Buffon—Cayenne).

Odontophorus gujanensis Selater & Salvin, *P. Z. S.* 1867. p. 591 (Capim River); Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 289 (Pará).

One ♂, 1. iii. 1904. No. 2008. "Iris brun-rouge."

It differs from a good series from British Guiana in having no dusky bars whatever on the rump and lower surface, these parts being quite uniform. One specimen from the Capim River, collected by Wallace, however, is not distinguishable from Guiana examples, having the bars quite as distinct as the latter. A series of Cayenne skins should be compared.

87. *Creciscus melanophaius* (Vieill.).

Rallus melanophaius Vieillot, *Nouv. Dict.* xxviii. (1819) p. 549 (ex Azara: "ypacaha pardo obscuro."—Paraguay).

Porzana melanophaca Layard, *Ibis*, 1873. p. 396 (River Guamá, near Pará).

One ♂ ad., January 28, 1904. No. 1950. "Iris brun."

This specimen differs from a series from Bahia and Rio de Janeiro in much darker, more sepia brown upper surface, especially deep blackish rump and tail and blackish brown secondaries and tertiaries. The black and white barring appears to be more restricted, and the eye- and loreal-region are pale rufous. In the latter respect, however, a specimen from Bahia is quite similar, but the upper parts are much paler. A series from Pará is required to decide whether the above differences are constant or not.

The specimen measures : Wing 85 ; tail 40 ; bill 18 mm.

88. *Creciscus viridis* (P. L. S. Müll.).

Rallus viridis P. L. S. Muller, *Natursyst. Suppl.* (1776) p. 120 (ex Daubenton, *Pl. enl.* 368—Cayenne).

Porzana cayennensis Selater & Salvin, *P. Z. S.* 1867. p. 592 (Pará).

P. cayennensis Pelzeln, *Zur Ornith. Brasil.* iii. (1869) p. 316 (Pará).

One ♂ ad., taken April 8, 1904. No. 2044. "Iris rouge vif."

The specimen agrees well with a series from Surinam, but has the lower parts a shade paler. With a series of both, the typical form and that of Eastern Brazil, before me, I can no longer distinguish *C. c. pileatus* (Wied), the alleged differences in the intensity of the chestnut-rufous colour on the pileum and on the under surface not being constant.

89. *Crypturus variegatus* (Gm.).

Tetrus variegatus Gmelin, *Syst. Nat.* 1. ii. (1788) p. 768 (ex Daubenton, *Pl. enl.* 828—Cayenne).
Tamias variegatus Pelzelo, *Zur Ornith. Brasil.* iii. (1869) p. 293 (Pará).

One ♂, not quite adult, January 19, 1904. No. 1914. "Iris brun."

Differs from several specimens from British Guiana, collected by the late H. Whitely, in its longer bill and in having the light bars on the upper surface much broader and of a much brighter fulvous colour. The blackish barring on the flanks, too, seems to be more restricted. A series is required, to confirm the constancy of these divergencies or otherwise.

NOTES ON *ZAGLOSSUS* AND DESCRIPTION OF A NEW
SUBSPECIES OF *ECHIDNA HYSTRIX*.

BY THE HON. WALTER ROTHSCILD, Ph.D.

DR. K. TOLDT, jun., has read a paper on the genus *Zaglossus* Gill = *Proechidna* Gervais, before the K.K. Zoologisch-botanische Gesellschaft, in Vienna, and in connection therewith wrote to me for particulars about my *Zaglossus nigroaculeata*. I had occasion, therefore, in order to settle several questions, to examine my series of nine specimens of *Zaglossus*, and I take the opportunity to give a key of the genus and make some remarks.

At first sight it became apparent that I had three very easily distinguishable forms, which not only differ among themselves, but show the same comparative differences as do the subspecies of *Echidna hystrix*. Although the genus *Zaglossus*, according to some authors, sinks owing to occasional specimens having five or four claws instead of three, I think the long curved "beak" and the extra-dorsal and lumbar vertebrae, 17 and 4 as opposed to 16 and 3, sufficiently warrant the upholding of the genus.

I have three specimens of each form of *Zaglossus*, young and old, and I am convinced of their distinctness. As all these specimens were procured by native hunters, the locality cannot be accurately ascertained, but there are in Dutch New Guinea several distinct faunal areas, so that I have no hesitation in declaring these three forms well separated and distinct "SUBSPECIES." I now give a key, for the better identification of these three forms.

ADULTS.

1. Head pale brown or white, sharply separated from rest of body, spines white : 2.
 Head and body uniformly dark, spines black : 3.
2. Hair pale brown, thick, long and woolly, completely hiding spines, except on flanks and shoulders : *Zaglossus braijni villosissima*.
 Hair brownish black or black, short, thick, not hiding spines : *Zaglossus braijni braijni*.
3. Hair long, thin, bristly, spines somewhat flattened : *Zaglossus braijni nigroaculeata*.

It has been stated by some authors that *Z. h. villosissima* (Dubois) is only the young of *Z. bruijni bruijni*, but my specimens show that the very old *villosissima* are more hairy and have the characters pointed out by Dubois more exaggerated, both than in his type and in my young (?) examples.

It may interest students to know that Professor Giglioli, when on board the Italian frigate "Magenta," bought in Java a skin of *Zaglossus bruijni bruijni*, which he gave to the Turin Museum. Although he was told it came from New Guinea, this was not believed, and the stuffed specimen stood for many years labelled as *Echidna setosa*, and was only recognised years after the type skull was described by Peters and Doria.

***Echidna hystrix multiaculeata* subsp. nov.**

Differs from *E. h. hystrix* at first sight by its much paler colour and much more numerous spines. The spines in *E. h. hystrix* are somewhat separated, very thick, tapering quite suddenly to a point, and are whitish yellow, the anterior fourth being deep black. These spines are thickly interspersed with brownish black hairs, while the hair on the head, legs and underside is deep brown. The spines in my new *E. h. multiaculeata*, on the other hand, are exceedingly numerous, very long and thin, pale buff, tipped with horn-colour, and tapering gradually to a long point. They are interspersed with thin yellowish brown hairs, and the hairs on the head, legs and underside are pale clay-brown.

Habitat : Extreme south of South Australia.

I have seen and handled more than thirty of this form, all alike, and the two consignments which reached England contained over a hundred specimens.

Dr. Ernst Hartert differs from me somewhat as to the specimens which I consider to be the young of *Zaglossus bruijni bruijni*. These individuals are smaller, and have the head dark like the back. Dr. Hartert is inclined to think that the differences of these specimens might as likely be those of sex as of youth; and there is certainly some doubt as to the question of age, as we have no means of comparing the skulls. In my original description of *Zaglossus nigroaculeata* (under the name of *Proechidna nigroaculeata*) I quoted the names of *Proechidna noraequineae* and *Proechidna leucocephala*. These names have never been published, and were quoted from a dealer's letter without confirmation.

NEW AMERICAN *THYRIDIDAE*, *URANIIDAE*, AND
GEOMETRIDAE.

By W. WARREN, M.A., F.E.S.

FAMILY *THYRIDIDAE*.

1. *Iza mediovineta* spec. nov.

Forewing: pale ochreous, reticulated with red; the costa broadly dull red, swollen at middle into an irregularly triangular blotch, connected between veins 4 and 5 by a narrow neck with a similar blotch, which does not touch the inner margin; beyond the triangular blotch on costa is a subquadrate one reaching to vein 7, and two smaller ones before apex; in two or three places towards hindmargin the reticulations are swollen into small blotches; fringe deep red at base, paler at tips.

Hindwing: with a disjointed angulated mark across the middle; hindmargin with a deep brown line before fringe.

Underside the same, but all the dark markings stronger and brighter.

Head red; thorax and abdomen reddish grey; legs pale ochreous, spotted with red-brown.

Expanse of wings: 60 mm.

1 ♀ from the Amazons.

The hindwing is triangular, the hindmargin straight, the apical angle acute, the anal angle rounded off.

FAMILY *URANIIDAE*.

SUBFAMILY *EPIPLEMINAE*.

2. *Epiplema rotundata* spec. nov.

Forewing: dull fawn-colour, hardly speckled, browner along the costa; the lines brown: first at one-third, strongly angled outwards in midwing; the outer at two-thirds, outcurved from subcostal vein to submedian fold, edged outwardly by a fine ochreous line; a curve of four blackish spots before margin from apex to vein 4, the margin beyond them darker; fringe concolorous; central space slightly darker than rest of wing.

Hindwing: with the same lines brown but indistinct; two small black marginal spots below veins 7 and 4.

Underside of forewing with a brown tinge, of hindwing as above; both with slight striations, but no markings.

Face, palpi, and forelegs brown; vertex, thorax, and abdomen like wings.

Expanse of wings: 15 mm.

1 ♂ from Patino Cué, Paraguay, February (Montforts).

Apex of forewing rounded, hindmargin convex, simple; hindwing rounded, without teeth, faintly indented beyond cell.

3. *Gathynia biocellata* spec. nov.

Forewing : dull brownish grey, covered with dark atoms, without markings of any kind except three or four small black spots close before hindmargin below apex ; the space beyond them from apex to vein 5 narrowly brown, edged by a pale line before the brown-grey fringe.

Hindwing : blackish, with a curved inner black line near base and a double outer line roundly prominent in middle of wing, internally edged by blackish blotches and externally by a pale line ; between them the discocellular is followed by two snow-white spots ; a row of dark lunules along margin from upper to below lower tooth, inwardly limited by a fine white line which is toothed to margin along veins 4 and 6 ; fringe dark brown ; the base of wing marked with black streaks on each side of a hyaline oval patch.

Underside of forewing like upper ; of hindwing whitish, thickly striated with grey.

Face, palpi, and forelegs dark brown ; vertex, thorax, and basal segment of abdomen pale brownish grey, like forewing ; the rest of abdomen blackish, like hindwing.

Expanse of wings : 18 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., March 1902, wet season (Ockenden).

Hindmargin of forewing simple, of hindwing toothed at 4, 6, and 7 ; the costa sinuous, and developing a large shoulder at base ; a hyaline oval spot at base of cell.

Allied to *G. dilacerata* Guen.

4. *Psamathia parallelaria* spec. nov.

Forewing : ash-grey, covered with irregular transverse fuscous strigulations ; the costal edge pale, with short black marks ; two brownish fuscous lines ; the first straight from about one-fourth of costa to one-third of inner margin ; the second from three-fifths of costa to two-thirds of inner margin, slightly flexuous ; traces of a dark submarginal spot between veins 6 and 7, as in *Ps. laticaudata* Wlk. ; fringe dark beyond a fine dark marginal line ; no distinct cell-spot.

Hindwing : with outer line only, geminate, and forming a short acute beak towards the tail on vein 4 ; marginal line thick, diffuse, followed by a fine pale line before the dark fringe, swollen into a large horseshoe-shaped blotch in upper part of tooth between vein 3 and 4 ; a small spot in lower end of tooth beneath 3, and a semicircular mark on margin below tooth between veins 2 and 3.

Underside paler, with dull striae, but no markings.

Face, palpi, and forelegs dark brown ; vertex, thorax, and abdomen concolorous with wings.

Expanse of wings : 35 mm.

1 ♀ from Tuis, Costa Rica.

Distinguished mainly by the straight, not acutely angled, outer line of forewing.

In this ♀ the hindmargin of forewing is bluntly angled at vein 4, and the apex minutely produced.

5. *Syngria griseata* spec. nov.

Forewing: dirty whitish, covered with very fine dark grey transverse striae, most densely in the basal two-thirds, especially round the discocellular and along the inner edge of the outer line; the two lines finely whitish, edged with darker; the first strongly curved at one-fifth, the basal area within it dark grey; outer line from three-fifths of costa, obliquely sinuate outwards to vein 4, where it is acutely angled, then concave to vein 1, where it is a second time acutely angled, reaching inner margin at three-fourths; some dark shades along hindmargin, and a black lunule between veins 6 and 7; costa dotted and spotted with fuscous; a fuscous marginal line; fringe fuscous, with paler basal line.

Hindwing: with costal area broadly whitish; outer line as in forewing, but with the dark internal edging more distinct towards inner margin, and not towards costa as in forewing; an obscure antemedian line; the submarginal shades darker; marginal line black, swollen into spots at the teeth. In both wings the veins are finely pale.

Underside clearer white, with very coarse dark speckling; a submarginal shade, and the fringes dark grey.

Head, thorax, and abdomen dark cinereous; shoulders pale grey; face and palpi brown; abdomen beneath and legs pale grey; forelegs fuscous.

Expanse of wings: 40 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., November 1902, wet season (Ockenden). The forewings are strongly and acutely falcate.

6. *Syngriodes discolor* spec. nov.

Forewing: dirty whitish, towards base suffused with greyish ochreous; the lines paler, with darker edging; first evenly and strongly curved at one-fifth; outer line from two-thirds of costa to three-fourths of inner margin, convex outwards to vein 4, then concave: an indistinct median and submarginal shade greyish ochreous; a dull grey cell-spot.

Hindwing: shaded with dull ochreous grey, without the basal line; the outer line accompanied by blackish mottlings.

Underside cream-coloured; forewing with an oblique blackish submarginal band from vein 6 to below 2, and traces of a median cloud; hindwing with the band faint and thin.

Face and palpi dark brown; vertex, thorax, and abdomen like wings.

Expanse of wings: 34 mm.

1 ♀ from Cartago, Costa Rica, June 1903 (Underwood).

The single example is not in perfect condition, but appears quite distinct from *S. incisaria* Wlk., to which it is most closely allied.

7. *Thysanocraspeda nudata* spec. nov.

Forewing: pale grey, speckled with blackish, and slightly tinged with fawn-colour; an indistinct interrupted central fascia, the outlines only blackish at costa, and again above inner margin, where they form two small spots above the submedian vein and two smaller below it, much as in *T. geminipuncta*; a slight dark curved mark before the shallow excision.

Hindwing: browner, with black speckling; the inner margin grey; the tuft of inner margin yellowish.

Underside without markings, grey with a brownish tinge.

Face and palpi blackish; vertex, thorax, and abdomen grey.

Expanse of wings: 22 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902 (Ockenden).

Intermediate between *T. geminipuncta* and *inornata* Warr. The outline of the wings as in the latter: the forewing, however, has no rough hairs at anal angle, along veins 1 and 2, nor is vein 2 curved downwards; the hindwing beneath has no rough grey hairs towards anal angle, but, as in *geminipuncta*, a patch of rust-brown scales in the furrow. But for this and the traces of the central fascia on forewing it might easily be mistaken for *inornata*.

FAMILY GEOMETRIDAE.

SUBFAMILY OENOCHROMINAE.

Leptoctenopsis Warr., *Nov. Zool.* ii. p. 84 (1895).

Parachoreutes Warr., *Nov. Zool.* iv. p. 416 (1897).

I find that the neurulation in these two genera is the same; veins 7, 8, 9, 10 are always stalked, but the course of 10 before anastomosis with 11 is so short as easily to be overlooked; 11 anastomoses strongly with 12, 10 generally anastomosing with 11 and 12 coincidentally before the separation of the costal portions of these two veins, which run close together; subsequently 10 anastomoses with 8, 9. Neither are the palpi different; their superficial appearance varies according to the position assumed in death. The species *subpurpurea* Warr. must therefore be transferred to *Leptoctenopsis*.

8. **Racasta caberaria** Wlk.

This species has hitherto generally been sunk to Guenée's *spatiaria*, but, as far as I can judge, incorrectly. Guenée states that in the forewing of his species the four lines do not reach the costa; but in *caberaria* they traverse the forewing as completely as the three lines of the hindwing. As far as description goes, the two species are better kept separate, following Druce, who, in the *Biologia*, ii. p. 123, quotes Walker's species *caberaria*, but not Guenée's. Dognin's *extendata* will in this case, I think, sink as a synonym of *caberaria*.

SUBFAMILY MECOCERATINAE.

Lasiopates gen. nov.

A development of *Phellinodes*.

Forewing: nearly three times as long as wide; costa straight, depressed close before apex; hindmargin vertical to below vein 6, then strongly oblique; inner margin with a large rounded lobe at base.

Hindwing: costa slightly curved; apex rounded; hindmargin vertical to vein 4, then sinuous, slightly incurved before anal angle; inner marginal area broad.

Abdomen of ♂ long; palpi well developed, upcurved in front of face, all the

segments distinct, hairy; tongue and frenulum well developed, the retinaculum forming as usual a strong bar, club-shaped at end; antennae thick, subserrate, with sessile fascicles of cilia; legs long, with rough shaggy hair; pectus woolly.

Neuration: forewing, cell three-fifths of wing; discocellular bent, oblique inwards in upper two-thirds: first median just beyond middle; second at seven-eighths; radials normal; 7, 8 stalked from before end of cell; 9, 10, 11 free, 11 from just beyond middle, straight, well separated from 12; 9, 10 sinuous, 10 approximating first to 11, then to 9; 9 approximating first to 10, then to 8: hindwing, cell two-fifths of wing; costal diverging at base from subcostal; 7 from before end of cell; median vein swollen near base into a dark bulbous excrescence, curved upwards from the origin of vein 3; vein 2 apparently from near base; inner marginal area hairy, the cell-membrane puckered.

Type: *Lasiopates hyacinthina* spec. nov.

9. *Lasiopates hyacinthina* spec. nov.

Forewing: hyaline white, but this ground-colour shows only along cell and below its outer half, all the rest of the wing being covered with irregular fuscous partially confluent striae, the whole surface, except along extreme hindmargin, glossed with violet-purple according to the incidence of light: at two-fifths a broad dark mark runs obliquely across cell from costa, and before apex there is a dead white triangular costal spot; along the hindmargin the white ground-colour shows behind the fuscous mottling, and there are three dark blotches before margin, one above vein 6 and one on each side of vein 3; fringe dark grey, paler in places, and whitish-mottled at anal angle.

Hindwing: with the hyaline area embracing not only the cell, but an equal area beyond it between veins 4 and 6 and half the space between 3 and 4; the costal and outer margins broadly fuscous, the inner margin white mottled with fuscous; fringe white, tinged with grey, especially towards apex; veins across the hyaline area black; wings with no purplish gloss.

Underside like upper, but forewing without the purplish gloss.

Face and palpi whitish ochreous, tinged with grey; vertex white; thorax, shoulders, and patagia grey, the last whitish at base internally; abdomen cinereous, with a yellowish tinge beneath; forelegs whitish, blotched with dark grey; middle-legs fuscous; hindlegs pale ochreous.

Expanse of wings: 56 mm.

1 ♂ from R. Cayapas, N.W. Ecuador (Flemming & Miketta).

SUBFAMILY CYLLOPODINAE.

Authyala gen. nov.

Like *Dioptis* and *Tanaostyla*, but distinguished by the neuration. In the forewing the cell is half as long as the wing, with the discocellular oblique throughout; vein 2 at three-fourths, 3 from end of cell along with 4, not stalked with it; the radials rising apparently near together from centre of discocellular; in hindwing veins 6, 7 are long stalked, vein 2 from one-half, 3 from three-fourths.

Antennae of ♂ pectinate; palpi upcurved in front of face.

The wing-membrane is actually hyaline.

Type: *Authyala obliquaria* spec. nov.

10. *Authyala obliquaria* spec. nov.

Forewing : hyaline ; the margins black ; inner margin below submedian vein rufous, also above it as far as vein 2 ; a narrow rufous line below subcostal vein to middle ; veins all black ; an oblique black tooth from costa enveloping the discocellular : an oblique streak from two-thirds of costa to hindmargin at vein 4, slightly projecting externally on the veins : beyond the middle the hyaline subcostal space is slightly white.

Hindwing : with costal and hindmargins and the veins black ; no markings.

Underside like upper ; costa of hindwing whitish.

Head, thorax, and abdomen blackish ; face white, with a dark centre ; palpi black ; pectus and abdomen beneath white ; legs externally black, internally white.

Expanse of wings : 44 mm.

1 ♂ from Cuzco, Peru, April 1901 (Garlepp).

11. *Campylona aurata* spec. nov.

Forewing : purple-brown, with three yellow areas ; a large triangular space at base, reaching three-fourths of inner margin, limited above by the subcostal vein ; a long oval blotch from below middle of costa to submedian fold, separated from the basal space by a narrow band of dark ground-colour ; a small elongate yellow blotch towards apex.

Hindwing : yellow, with hindmargin purple-brown, from beyond middle of costa to above anal angle.

Underside like upper.

Face, two spots on shoulders, and abdomen yellow ; vertex and thorax dark ; palpi with second segment yellow, terminal dark ; abdomen with dark dorsal and lateral stripes ; abdomen beneath and legs whitish.

Expanse of wings : 44 mm.

1 ♀ from Bogota.

Near to *C. contingens* Warr., and possibly a form of it.

12. *Cyllopoda latiflava* spec. nov.

Forewing : pale yellow ; the costa and inner margin black ; a broad black bar from middle of costa to anal angle, cutting off a long oval yellow space reaching from subcostal vein to submedian fold, its outer edge curved and somewhat crenulate.

Hindwing : with a narrow black border, curving from before apex to anal angle ; inner and costal margins entirely yellow.

Underside the same.

Head, thorax, and abdomen above black ; base of patagia internally bright yellow ; face and palpi below pale yellow ; abdomen beneath white.

Expanse of wings : 40 mm.

1 ♂ from Colombia.

13. *Cyllopoda tenuis* spec. nov.

Closely related to *C. chibcha* Schaus, and agreeing with it in the forewing ; in the hindwing the subcostal dark margin is wanting, being represented only by a slight black streak at base of cell ; the black marginal border, which commences at

two-thirds of costa, becomes very narrow below apex, and ends in a point at anal angle ; the fringe only of the abdominal margin black.

Expanse of wings : 32 mm.

1 ♂ from Castro, Parana (E. D. Jones).

14. *Dioptis chloris*.

Dioptis chloris Druce, *Pr. Z. S.* 1893, p. 295, ♂.

A ♀ from Carillo, Costa Rica, differs from the ♂ in having the first cross-band, which runs from below middle of costa towards anal angle, very much broader and ampler. The ♀ expands 36 mm.

The species differs from other *Dioptis* in having the cell shorter, scarcely more than one-third of wing, vein 2 from just before end of cell, and 3, 4 long-stalked ; the other nervules being lengthened in proportion.

15. *Dioptis vacuata* spec. nov.

Forewing : hyaline grey ; all the veins thickly black, the folds more finely ; costal and inner margins black ; hindmargin more broadly, especially at apex ; a black oblique mark across the discocellular, followed by a broad black roughly-edged streak from two-thirds of costa to near end of vein 4, where it is bent at right angles, and runs, much finer and more obscure, to inner margin before anal angle ; between this and the black hindmargin the wing is dead white, the veins from subcostal to 4 also white ; fringe black.

Hindwing : with costal and hindmargins black ; all the veins black ; the intervals between just before margin whitish.

Underside the same, but duller.

Head, thorax, and abdomen black ; cheeks white ; a white spot behind antennae ; a white dorsal stripe on abdomen ; basal half of patagia orange.

Expanse of wings : 48 mm.

1 ♂, 1 ♀, from Chiriqui, Panama.

16. *Ephialtias aperta* spec. nov.

Forewing : brown-black ; a yellow streak from below costa beyond middle to vein 1 at anal angle, its outer edge slightly bulged outwards below vein 5, broader and deeper in ♀ than in ♂ ; fringe concolorous.

Hindwing : yellow, with broad brown-black borders, except along the short inner margin, and, as in forewing, broader and deeper yellow in ♀.

Underside dark brown ; the yellow paler.

Head and thorax like wings ; the abdomen duller, beneath with slight blue reflections.

Expanse of wings : ♂, 37 mm. ; ♀, 40 mm.

1 ♂ from Cajon, Cuzco, October 1900, *type* ; 1 ♀ from Cuzco, Peru, April 1901 ; 1 ♀ from Yungas de la Paz, Bolivia, September 1899 (Garlepp).

17. *Ephialtias dorsispilota* spec. nov.

Forewing : deep brown-black, with a narrow slightly curved luteous yellow band, with its edges indented at the veins, from below three-fifths of costa to vein 1 at anal angle ; fringe slightly paler.

Hindwing: wholly black.

Underside like upper, but the fascia of forewing broader and orange-yellow.

Pulpi black, grey below: face black, with a grey spot below each antenna; vertex, thorax, and abdomen black: an orange spot behind each eye; dorsum with six small pale luteous spots: an olive belt across vein 5: a broad yellow lateral stripe; legs black, with the inside yellowish.

Expanse of wings: 40 mm.

2 ♂♂, 1 ♀, from Cananche, Cundinamarca, Colombia, July 1903 (de Mathan).

The fascia of forewing is exactly like that in *Sagaris stygne* Wlk. and *Phararava erymnis* Hüb.; but in both the wings are much broader, and the dorsum unspotted, *erymnis* being further separated by the abnormal development of the hindwing of the ♂.

18. *Ephialtias percurrens* spec. nov.

Forewing: brown-black, crossed by a yellow band from middle of costa to anal angle, much as in *tryna* Schaus; but the yellow is deeper, its inner edge starts from before middle of costa, and the yellow runs through to costa and inner margin.

Hindwing: brown-black.

Underside like upper.

Head, thorax, and abdomen like wings.

Expanse of wings: 30 mm.

1 ♀ from Limbani, Carabaya, S.E. Peru, 10,000 ft., November 1901, wet season (Ockenden).

19. *Ephialtias repetita* spec. nov.

Forewing: velvety black, with slight blue reflections; a yellow band of uniform width from below middle of costa to vein 1 at three-fourths, its outer edge slightly convex outwards; fringe concolorous.

Hindwing: black, with strong blue reflections, with a trilobed yellow spot before apex, continuing the band of forewing.

Underside the same, but the yellow in both wings broader.

Head, thorax, and abdomen black, with blue reflections; underside of abdomen dull whitish, with a grey streak down the centre.

Expanse of wings: 40 mm.

1 ♂ from Guadalupe, Cundinamarca, Colombia, August 1903 (de Mathan).

Nearest to *E. lindigi* Feld., from Panama, which is a larger insect with broader wings. There are two examples unnamed in the British Museum Collection from Sta. Martha. *E. ilaire* Druce resembles this species in the narrowness of the wings, but is without the yellow spot at apex of hindwing.

20. *Josia turgida* spec. nov., and ab. *conifera* nov.

Forewing: dark orange-fulvous; costa and inner margin brown-black, narrow at base, gradually widening outwards, the edge of the orange area beyond middle irregular and curved, and forming a blunt projection before margin at vein 4.

Hindwing: with the apex only broadly black-brown, this tint running in narrowly along the subcostal vein to midwing and containing a deeper coloured cell-spot; a horseshoe-shaped dark blotch on margin between vein 2 and the submedian

fold, connected with the apical blotch by the dark fringe, in one example only with the hindmargin itself narrowly dark.

Underside the same.

Face white; vertex, thorax, and dorsum black-brown; sides of shoulders and greater part of patagia yellow; a broad lateral stripe on abdomen yellow; abdomen beneath, pectus, and inside of the legs white; legs externally dark.

Expanse of wings : 32 mm.

3 ♂♂ from Valencia, Venezuela.

Nearest to *J. glycera* Druce.

ab. **conifera** nov.

Forewing : with the dark costal and inner-marginal borders gradually widening from base as in the type form; but the orange area in its outer half forms a narrow conical projection outwards, its edges nearly straight from middle of each margin.

Hindwing : with the dark apical blotch produced along subcostal vein narrowly to base of wing, and connected with an elongated blotch on hindmargin below vein 2 by a broad dark space.

Underside the same, but the black of the hindwings less developed.

Head, thorax, and abdomen as in the type form.

1 ♂ from Valencia, Venezuela.

Genus **Myrice** Wlk.

I find that the genus *Hemigymnodes*, described by me in *Nor. Zool.* i. p. 578, is identical with *Myrice* Wlk., ii. p. 536. Of the type species of this genus, *transiens* from Venezuela, I have lately seen 2 ♂♂ and 1 ♀ from Trinidad which are identical in structure with *H. nitida* Warr. from Costa Rica.

21. **Phelloë semiplaga** spec. nov.

Forewing : dull brown-black; the veins, especially towards base, grey; an oblique elongated oval white blotch from subcostal vein before end of cell reaching below vein 2; fringe concolorous.

Hindwing : dark purplish slate-colour, with a long semi-oval white streak occupying most of cell and reaching beyond it along vein 4, the rounded upper edge touching subcostal vein; fringe concolorous.

Underside of both wings dull purplish slate; both white blotches larger; the forewing, in addition, with a streak of white scales from base beneath median vein and another along inner margin.

Thorax and abdomen purplish slate; face, corslet, pectus, and basal segment of palpi orange; rest of palpi, antennae, and legs above dark; abdomen and legs below white.

Expanse of wings : 36 mm.

1 ♀ from Cananche, Cundinamarca, Colombia, July 1903 (de Mathan).

22. **Scea angustimargo** spec. nov.

Forewing : dull yellow, with all the veins thickly black; costa and inner margin finely black; hindmargin and apex black, the inner edge forming a strongly

curved line from close before anal angle to two-thirds of costa, the dark margin being much narrower than in *auriflamma* Hüb.

Hindwing : wholly brown-black.

Underside duller, the veins of forewing finely grey, the dark areas grey-brown ; hindwing with three orange subcostal streaks from base.

Head, thorax, and abdomen dull blackish.

Expanse of wings : 33 mm.

1 ♂ from Estanzia Cooper, Alto Paraguay (Inslay).

23. **Tithraustes albinigra** spec. nov.

Forewing : white for basal two-fifths, then black with white spots ; along the white basal area the costa and the subcostal and submedian veins are black, the last most broadly ; in the black area are four white spots, one large and oblong at end of cell, a small round one between veins 2 and 3 towards anal angle, and two towards hindmargin above middle, one on each radial ; fringe black.

Hindwing : white, with blackish border along hind and inner margins, forming a broader patch at apex.

Underside similar to upper, but the submedian vein of forewing hardly marked with black.

Head, thorax, and abdomen black ; base of patagia yellow ; abdomen beneath and legs whitish ; fore and middle legs blackish in front.

Expanse of wings : 26 mm.

1 ♂ from Chiriqui.

24. **Tithraustes fumosa** spec. nov.

Forewing : dark olive-fuscons, with the veins slightly paler, ending in dull yellowish marginal spots ; a dull yellow spot near base of cell ; a waved dull yellowish submarginal line ; fringe fuscons, with paler base.

Hindwing : dull grey, semihyaline ; fringe dark grey.

Underside dull smoky fuscons.

Head, thorax, abdomen, and legs all blackish fuscons.

Expanse of wings : 54 mm.

1 ♀ from Chiriqui.

Both wings elongate for the genus.

25. **Xanthyrus planilimbata** spec. nov.

Forewing : yellow ; the dark border of the hindmargin conspicuously narrower than in *glaceolata* Linn., its inner edge waved only, not toothed ; the veins not marked paler towards hindmargin ; the tint of the dark bordering is rather purplish brown than black.

Hindwing : similar.

Underside like upper, but the inner edge of the border is not even waved.

Head and thorax dark, like the border ; shoulders with both internal and external edges yellowish ; abdomen yellow, the anal segment darker ; tuft of hindlegs brownish.

Expanse of wings : 44 mm.

2 ♂♂ from Chanchamayo, Peru, September 1901 (Garlepp).

SUBFAMILY GEOMETRINAE.

Chrotochlora gen. nov.

Forewing: triangular; all the margins straight, the costa becoming convex before apex only; hindmargin oblique.

Hindwing: with apex and hindmargin rounded; anal angle square.

Abdomen without tufts; hindtibiae with four short spurs.

Neuration: normal, but in hindwing veins 3, 4, and 6, 7 are not (or scarcely) stalked. Frenulum present.

Although the unique specimen on which the genus rests is a ♀ and without a head, the scheme of coloration places it entirely outside of any known New World genus.

Type: *Chrotochlora perpulchra* spec. nov.

26. Chrotochlora perpulchra spec. nov.

Forewing: deep green; the cell-spot, a thick oblique streak beyond it from vein 6 to middle of inner margin, before which it becomes very faint, and a broad marginal border deep chocolate-brown; the inner edge of the border is slightly convex towards base, and at costa runs narrowly along it basewards for a short distance; fringe chocolate.

Hindwing: silky white, with a broad greyish chocolate border; the fringe dark chocolate; a minute cell-dot.

Underside like upper; costa of forewing at base brown, the outer streak running to costa; hindwing with traces of an interrupted curved olive median line; the white running up ray-like along the veins into the dark border.

Head wanting; patagia green; thorax and abdomen snuff-brown; anal half of dorsum black; second and fourth segments marked with a white ring; abdomen beneath and legs white; tarsi and tibiae mottled with brown.

Expanse of wings: 22 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

27. Gelasma clemens spec. nov.

Forewing: dull whitish, covered with dense olive-green vermiculations, and suffused with the same colour on each side of the inner and outer lines, which are fine and lunulate-dentate; the first very obscure at one-third; the second at four-fifths, sinuous; cell-spot obscure, green; the hindmargin narrowly green; fringe pale, with slightly darker chequering beyond veins.

Hindwing: without first line; a conspicuous dark green cell-spot.

Underside whitish green, with diffuse olive-green shades beneath the two lines.

Head, thorax, and abdomen pale greenish.

Expanse of wings: 22 mm.

1 ♀ from R. Cayapas, N.W. Ecuador (Flemming & Miketta).

The costa of forewing is slightly marked with pale dots, and has three more conspicuous ochreous spots before apex; but it lacks the purplish striae which occur in *hemithearia* Warr., from which it also differs in neuration: veins 3, 4 not being long-stalked, nor 6 stalked with 7, 8, 9 in the forewings. *G. albidata* Warr. is very much whiter.

28. *Lissochlora intacta* spec. nov.

Forewing: grass-green; costal edge very finely white; a minute dark cell-spot; fringe white; an extremely obscure series of white dots on veins representing an outer line.

Hindwing: without cell-spot.

Underside whitish green, deeper green towards costa of forewing.

Head, thorax, abdomen, and forelegs green; vertex and antennae snow-white a fine red line behind vertex.

Expanse of wings: 17 mm.

1 ♂ from Dominica.

29. *Oospila thalassina* spec. nov.

Forewing: sea-green; the costal streak and marginal lunules brick-red, speckled with blackish; between veins 4 and 6 and below vein 2 these lunules are swollen into large rounded blotches, that at anal angle the larger; the one above vein 6 and the two between veins 2 and 4 remain quite small; cell-spot large, black-brown, edged with red; a deeper green lunulate-dentate shade is visible in certain lights only before hindmargin and towards base; fringe rufous-grey, mottled darker beyond the veins; a fine dark marginal line.

Hindwing: with the lunules only slightly swollen at apex and anal angle; a red-brown cell-spot on lower arm of discocellular and a white inconspicuous spot at upper end of upper arm.

Underside whitish green, rosy-flashed in the forewing; costa of forewing pink, unspeckled; the large lunules only marked, and wholly dark brown; fringe pale, chequered with brown, beyond a dark marginal line: hindwing with slight brown blotches at apex and anal angle.

Face, palpi, forelegs, and antennae red-brown; thorax and basal portion of abdomen green; anal segments reddish ochreous; dorsum with five crests of red-brown and metallic scales; abdomen beneath whitish; a lateral grey-pink line between the green above and the paler underside; legs pale.

Expanse of wings: 35 mm.

1 ♂ from Cuzco, Peru, April 1901 (Garlepp).

Hindwing with crenulate hindmargin; the tooth at vein 4 very faint.

Prasinoscia gen. nov.

Forewing: triangular; costa gently curved at base and before apex; hindmargin oblique, below vein 3 more oblique and subcrenulate.

Hindwing: kite-shaped, bluntly angled at vein 4, and crenulate.

Antennae of ♂ (tips broken) plumose, the pectinations exceptionally long and covered with down-like ciliations, exactly as in the separate plumelets of a bird's feather; palpi slender, quite short; eyes very large; tongue and frenulum present; hindtibiae with four spurs.

Neuration: forewing, cell less than half of wing, broad; discocellular concave; first median nervule at two-thirds, second close to third, the median inbent from its origin; lower radial from above centre of discocellular, upper from top end of cell; 7, 11, 10, 8, 9 all stalked together: hindwing, costal and subcostal anastomosing

for nearly the whole length of cell, as in *Hydata* ; 3, 4 and 6, 7 stalked ; radial from above middle of discocellular.

Type : *Prasinoscia insolens* spec. nov.

30. *Prasinoscia insolens* spec. nov.

Forewing : yellow-green, overlaid with darker green in places ; centre of wing occupied by a diffuse grey fascia, broadest in the middle ; a slight dark cell-spot ; fringe yellowish.

Hindwing : with the fascia narrower, sinuous, formed of three grey shades : marginal area darker green, with a fine submarginal shade.

Underside whitish green ; forewing for three-fourths from base clouded with dark grey.

Face (damaged) dark brown ; thorax and legs yellow-green ; abdomen wanting.

Expanse of wings : 20 mm.

1 ♂ from Valencia, Venezuela.

This species might easily be mistaken for a small *Gelasma*.

31. *Racheolopha rufilimes* spec. nov.

Forewing : semihyaline green, with a black cell-spot, and the costal edge marked with rufous ; hindmargin with a rufous border, formed by red scales massed on a yellow ground, the veins remaining yellow ; the internal edge of this band is lunulate between the veins marked by a dark line edged in parts with yellow, and projecting beyond cell and below vein 3 ; a marginal red line, interrupted at the veins ; fringe yellow.

Hindwing : similar.

Underside paler and duller, the marginal band showing through.

Face and a line behind vertex reddish ; vertex and antennal shaft white ; thorax and basal half of abdomen green ; the rest rusty brown on dorsum, with similar coloured crests.

Expanse of wings : 17 mm.

1 ♀ from R. Cayapas, N.W. Ecuador (Flemming & Miketta).

Near *micularia* Guen., but the antennae are simple, not pectinated, as is usual in the genus.

32. *Racheospila tenuimargo* spec. nov.

Forewing : pale blue-green, iridescent and semihyaline ; costa at base tinged with reddish, the costal edge throughout white ; from three-fourths of costa to two-thirds of inner margin a dentate-lunulate whitish line is faintly visible ; cell-spot red ; a thick red line along margin, interrupted by the veins and much swollen before anal angle ; the extreme hindmargin snow-white ; fringe white, chequered with red.

Hindwing : similar ; the red cell-spot larger ; the marginal line swollen at apex, and turning the anal angle ; a fine red line on middle of inner margin.

Underside whitish green ; the marginal red line shown ; the base of costa of forewing also reddish.

Face, palpi, and back of vertex red ; vertex itself snow-white ; thorax green ; abdomen red, with five snow-white dorsal spots.

Expanse of wings : 20—25 mm.

4 ♂♂ from Organ Mts., near Tijuco.

33. *Rhodochlora exquisita* spec. nov.

Forewing : dull greenish buff (possibly faded from grey-green); inner line bright scarlet, starting from a small blotch in cell, forming a long vertical curve to submedian fold, then a short one to submedian vein, where it stops; outer line vertical, lunulate-dentate, starting from vein 6, purple to vein 3, then to inner margin bright scarlet; followed by a series of four purple blotches between the veins, the lowest one between veins 2 and 3 surrounded by scarlet, which colour fills the whole anal space and is separated from the outer line by a bright yellow lunule; a small reddish cell-spot; fringe green.

Hindwing : with base dull pale yellow followed by a broad dull purple band edged irregularly with scarlet scales, containing a purplish linear cell-mark; outer three-fifths grey-green crossed by a purple and red dentate-lunulate line; a reddish and yellow streak running along veins 6 and 7, the costa remaining pale green.

Underside pale greenish, whitish in hindwing and along inner margin of forewing; a broad purple-red erect streak from anal angle of forewing to vein 6, with traces of a dark line before it; hindwing with a purplish apical blotch only.

Face and palpi reddish; vertex and base of antennae white; thorax and abdomen pale green, the latter tinged with red on anal segments; abdomen below and legs whitish green, the ends of the tibiae with a fuscous ring.

Expanse of wings : 40 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., January 1903, rainy season (Ockenden).

SUBFAMILY STERRRHINAE.

34. *Anisodes subpallida* ab. *figurata* nov.

Hitherto all the ♂♂ I have seen of this species, described in *Noct. Zool.* vii. p. 145, have not differed from the ♀♀. The aberration now characterised is marked by the intensification of all the black markings, especially in the hindwing.

In the forewing only the two subterminal shades are marked by enlarged black spots beyond cell and above anal angle: in the hindwing the spots of the basal series are united by a black line preceded by a dark shade; the median shade just beyond the cell-spot is diffusely blackish and obscurely serrate; the postmedian series is represented by a strong black denticulate line, and the two subterminal shades by contiguous large black spots, interrupted, like the outer line, only between veins 2 and 4.

This difference, however, is confined to the upperside, the under surface being quite normal; the tips of the metathorax are black and the second segment of abdomen bears a black ring; the dorsal segments are much redder than usual.

1 ♂ from Castro, Parana, October 1902 (E. D. Jones), accompanied by two quite normally coloured ♀♀.

35. *Cnemodes simplex* spec. nov.

Forewing : uniform flesh-colour, slightly tinged with olive-grey, without any markings; cell-spot faintly darker; fringe concolorous.

Hindwing : like forewing.

Underside paler.

Face and outside of palpi dull brownish; thorax and abdomen like wings.

Expanse of wings: 36 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., 1901 (Ockenden).

36. *Crypsityla subrosea* spec. nov.

Forewing: dull greyish pink, the costa paler, olive-ochreous; the whole wing, except at base and along costa, clouded with purplish fuscous; fringe grey-pink; some marginal pale spots at ends of veins; in certain lights there are traces of interrupted olive-ochreous waved cross-lines; cell-spot linear, dark, but inconspicuous.

Hindwing: wholly purple, except base and fringe.

Underside dull deep rosy, somewhat paler in hindwing.

Head, thorax, and abdomen dull red varied with purplish; shoulders and base of patagia olive-ochreous; antennae purple.

Expanse of wings: 22 mm.

1 ♂ from Guadalite, and 1 ♂ from Cananche, Cundinamarca, Colombia, August and September 1903 (de Mathan).

37. *Dichromatopodia hepaticata* spec. nov.

Forewing: brown-red, covered with very fine dark atoms; a fine dark outwardly oblique line at one-third; a thick straight blackish line from four-fifths of costa to three-fifths of inner margin, followed by a slight grey shade; cell-spot blackish edged with grey; a very fine dark marginal line, interrupted at the veins; fringe concolorous.

Hindwing: with median line only.

Underside duller, with the outer line only and cell-spot of forewing; inner margin of forewing glossy white.

Head, thorax, and abdomen like wings; tuft of hindlegs black and white.

Expanse of wings: 26 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, August 1903 (de Mathan).

Like *sobrina* Druce, but the lines are not margined with yellow.

38. *Emmiltis inquinatula* spec. nov.

Forewing: chalk-white, finely speckled with black and stained with yellowish along inner margin below middle as far as outer line; this is represented merely by a double oblique mark on inner margin and a rounded blotch between veins 2 and 4; an oblique short brownish blotch on inner margin similarly represents the median shade, and a black spot the inner line; cell-spot black, minute; a row of black marginal spots; fringe white.

Hindwing: similarly speckled and stained; cell-spot large, black; outer line double, the inner arm fine, black, dentate, the outer brown and diffuse; traces of a punctate submarginal line; marginal spots black.

Underside of forewing grey-tinged through basal three-fourths, of hindwing only along costa; grey cell-spots in both wings.

Head, palpi, and antennae black; thorax and abdomen snow-white.

Expanse of wings: 16 mm.

3 ♂♂ from Palcazu, Peru, Department Junin (Sedlmayr).

39. *Emmiltis ochratipennis* spec. nov.

Forewing: sandy yellowish, finely dusted with dark scales; the lines grey; first at one-fourth, slightly waved; second, median, at two-thirds, bluntly angled at veins 6 and 4, then incurved to middle of inner margin; outer line submarginal, distinctly lunulate-dentate; a grey cloud at anal angle; a fine interrupted marginal line; cell-spot oval, with pale centre.

Hindwing: like forewing, but without inner line.

Underside paler yellow, with the lines faint.

Head, thorax, and abdomen like wings; upper part of face and palpi dark.

Expanse of wings: 27 mm.

1 ♀ from Valencia, Venezuela.

Closely allied to *E. ambagifera* and *consobrinata* Warr., both from Venezuela, but very different in coloration and in the form of outer line.

Eumacrodes gen. nov.

Forewing: three times as long as broad; costa curved towards apex; hind-margin oblique, hardly curved.

Hindwing: equally narrow; apex depressed and rounded; hindmargin toothed at 4 and 6, strongly incised between; also toothed at 1, the margin from 4 to 1 parallel to costal margin and crenulate.

Antennae of ♂, in comparison with the general slenderness of the wings, thick; the segments angular, subserrate, with long cilia; palpi short; hindlegs aborted; the hindtarsi padded with hair, except the terminal segment.

Abdomen very slender and elongate, equal to the length of forewing.

Neuration of *Ptychopoda*, but cell longer than half of wing.

Type: *Eumacrodes gracilis* spec. nov.

40. *Eumacrodes gracilis* spec. nov.

Forewing: pale grey, semi-transparent, darker along the borders; lines shown by black vein-spots; the inner oblique outwards to near middle of inner margin, the median and outer from three-fifths and three-fourths of costa oblique inwards, all three approximating on inner margin, the median and outer angled outwards on vein 6; a small black cell-spot; black marginal dashes, and black dots beyond veins at the base of the pale grey fringe.

Hindwing: similar, but the lines obscure; a slight pale submarginal space is visible on each wing.

Underside brownish grey, paler in hindwing.

Face black; thorax and abdomen dark grey.

Expanse of wings: 22 mm.

1 ♂ from Valencia, Venezuela.

41. *Haemalea brunneata* spec. nov.

Forewing: dark purplish brown, deeper along costa and hindmargin; the lines, as far as visible, the same as in *nigromarginata* Dogn., the median shade thicker and straighter; fringe dark like the margin.

Hindwing: with the black cell-spot and two lines.

The paler inner areas of both wings have a slight cupreous tinge.

Underside coppery brown with the lines darker ; marginal areas and costa of forewing purplish.

Head, thorax, and abdomen dark purple-brown : fillet and base of antennae white ; abdomen beneath and legs cream-colour.

Expanse of wings : 22 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, August 1903 (de Mathan).

42. *Haemalea rufifimbria* spec. nov.

Forewing : pale straw-colour, with sparse blackish speckling ; lines faint, yellowish ochreous, all parallel in direction to hindmargin, inner, median, outer, and two submarginal, the last three waved and indented beyond cell ; cell-spot round, black ; marginal spots black and large ; costal edge and fringe bright rosy.

Hindwing : the same, without inner line ; the marginal spots small.

Underside whitish ochreous, without markings ; the rosy fringe preceded by a grey line ; costal area of forewing grey.

Face and palpi black ; vertex white with a fine black line on crown ; collar brown-pink ; thorax and abdomen like wings, and speckled with black.

Expanse of wings : 22 mm.

1 ♂ from Palcazu, Peru, Department Junin (Sedlmayr).

The antennae are fringed with very long and fine cilia.

43. *Heterephyra duplicata* spec. nov.

Forewing : ochreous with a flesh-coloured tinge, and slightly dusted with rufous ; lines and markings dark red-brown ; basal area speckled with brown, with two small blackish spots, one at base of cell, the other below it, above submedian vein, limited by a curved brown line from about one-sixth of costa to one-fourth of inner margin ; median line concisely double, dentate-lunulate, strongly outcurved from subcostal vein to below vein 2, then oblique outwards and angled on submedian ; the space between it and inner line along inner margin red-brown as far as submedian fold ; outer line single, lunulate-dentate, at two-thirds, angled at veins 6 and 4, then incurved and approaching median on inner margin ; a large quadrate red-brown blotch occupying apex to vein 4, containing a slight oblique paler subapical mark on costa, indicating origin of submarginal line ; a small blotch of the same colour filling anal angle ; costa diffusely red-brown to beyond middle ; cell-mark formed by two brown dots, one at each end of discocellular ; marginal line crenulate, blackish, interrupted by pale dots at the end of the veins ; fringe red-brown, except from vein 2 to 4, where it is flesh-coloured, with a dark dot at base beyond veins 2 and 3.

Hindwing : red-brown, with the base narrowly, and a patch at anal angle pinkish ochreous ; cell-spot and lines as in forewing, but the median line single, not double.

Underside ruddy ochreous, with all the markings fuscous.

Head, thorax, and abdomen ochreous tinged with reddish ; palpi externally red-brown.

Expanse of wings : 36 mm.

1 ♀ from Guadalupe, Cundinamarca, August 1903 (de Mathan).

Resembling *H. commaculata* Warr. from Rio Demerara, but apparently distinct.

44. *Lipomelia rubicunda* spec. nov.

Forewing : pale liver-colour, tinged with reddish ; costa at base broadly black-brown ; cell-spot silvery white with black edge ; a reddish median line from middle of costa to middle of inner margin, straight to median vein touching the cell-spot, then sinuous ; outer line from two-thirds of costa, strongly outcurved to vein 2, then again outcurved and vertical to inner margin before anal angle ; a large hoary grey blotch at apex with dark curved inner edge from costa to vein 5, its centre reddish and the marginal spots in it large and black ; a similar but much smaller blotch at anal angle ; marginal spots between grey ; fringe reddish.

Hindwing : like forewing.

Underside bright vinous, with blackish marginal borders broadening towards apex of each wing, the black extending into the fringes.

Expanse of wings : 25 mm.

1 ♀ from Ariapite Valley, Trinidad, June 1902.

45. *Ptychopoda informipennis* spec. nov.

Forewing : glossy olive-ochreous, flushed with pinkish and finely and sparsely speckled ; costa pink-tinged ; a faint diffuse pinkish shade, only clearly visible on inner margin, denotes the inner and median lines ; outer line submarginal, finely blackish, indented beyond cell and across submedian fold, outcurved between, from five-sixths of costa to just before anal angle ; the marginal area pinkish lilac ; a slight dark marginal line ; fringe yellowish ; cell-spot small, blackish.

Hindwing : similar ; the median pink shade distinct.

Underside the same ; the costal half of forewing flushed with pinkish grey.

Face and palpi blackish ; collar pink ; vertex, thorax, and abdomen ochreous yellow, the abdomen pink-tinged on dorsum.

Expanse of wings : 17 mm.

1 ♀ from R. Colorado, Peru, August, September 1902 (Watkins).

Both wings broader and shorter than usual, rounded at apex and indented opposite cell ; the inner margin of forewing convex.

I have seen several other examples from different localities in Peru, but all too poor to describe.

Schematorhages gen. nov.

Forewing : triangular ; costa sinuate, inflexed in middle, apex produced, depressed ; hindmargin sinuous, longer than inner margin, into which it curves without forming a defined angle.

Hindwing : aborted, narrow ; the costa convex and curving into hindmargin, inner margin truncate and distorted.

Antennae with the joints angulate, ciliated ; palpi slender, short, obliquely upturned ; tongue slight ; frenulum very fine, but long ; hindlegs aborted.

Neuration : forewing, cell half as long as wing, broad ; discocellular vertical ; first median nervule at two-thirds, second close before third ; radials normal ; 7, 8, 9 stalked ; 10 and 11 stalked, anastomosing with the stem of 7, 8, 9 ; hindwing, cell reduced to a short oval, with four veins visible, one from the apex of the oval to below apex of wing ; two from the lower margin of cell running into the projecting middle of hindmargin, and one apparently from base ; the inner margin folded and

contorted, without any visible venation. From the base of forewing there are traces of a wisp of long straggling hairs.

Type : *Schematorhages arhostiodes* spec. nov.

46. *Schematorhages arhostiodes* spec. nov.

Forewing : bone-colour, covered with grey speckles ; basal and median lines obscure ; the first curved vertically, the second from beyond middle of costa, where it starts from a black spot, is incurved below the black cell-spot and reaches inner margin close to inner line ; outer line fine, black, irregularly waved from four-fifths of costa to a little before anal angle, somewhat outcurved below middle ; two grey submarginal bands with the pale submarginal line between them ; a row of dark linear marginal dashes ; fringe pale.

Hindwing : with two thick black lines before middle, diverging on inner margin, the rest of the wing pale, with dark atoms, but no markings.

Underside ochreous ; forewing with basal area grey ; cell-spot black ; the outer line and two submarginal shades distinct : hindwing pale, without markings.

Face and palpi dark brown ; vertex, thorax, and abdomen ochreous dusted with grey.

Expanse of wings : 17 mm.

1 ♂ from R. Colorado, Peru, 2500 ft., August, September 1902 (Watkins).

47. *Synelys ochreolata* spec. nov.

Forewing : white with an exceedingly faint ochreous tinge ; in certain lights an outer line and two submarginal shades can just be made out ; fringe white.

Hindwing : the same.

Underside white ; the basal three-fourths of forewing suffused with reddish grey.

Face and palpi black ; vertex, thorax, and abdomen white.

Expanse of wings : 26 mm.

1 ♂ from R. Colorado, Peru, 2500 ft., August, September, 1902 (Watkins).

The angle of the hindwing is blunt.

48. *Tricentra commixta* spec. nov.

Forewing : along inner margin at base greyish olive, with a darker smoky patch at base of costa ; costal area in middle dull brownish yellow ; outer half of wing red-pink, the apex pale yellow ; lines olive-fuscous : first fine, from one-fourth of costa curved to beyond one-fourth of inner margin, with fine black points on the veins and folds ; median line diffuse, curved, from middle of costa to beyond middle of inner margin, the red on each side of it deeper ; outer line fine, irregularly dentate-lunulate, from two-thirds of costa to inner margin just before anal angle, marked on submedian fold by a conspicuous black spot, followed at costa by a broad fuscous band curving to hindmargin and running out into the yellow fringe between veins 4 and 2 ; anal angle and fringe fuscous ; cell-spot formed of two coalescent semihyaline white dots.

Hindwing : blurred olive, with dull red postmedian band from vein 4 to 1, through which is visible the waved dark outer line, bearing, as in forewing, a black

spot on submedian fold, but much smaller; fringe and extreme hindmargin dull yellow; cell-spot formed of two white dots not coalescent.

Underside of forewing dark leaden fuscous, the costal area reddish and yellow; the apex with apical and anal fringe, and a large cell-spot whitish yellow; a darker obscure outer line; hindwing whitish yellow clouded with grey, the cell-spot and outer margin remaining pale; a dark postmedian line.

Head, antennae, and shoulders vinous red; thorax and dorsum olive; anal segment and underside of abdomen, and the legs ochreous; forelegs reddish fuscous in front.

Expanse of wings: 32 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

49. *Tricentra decorata* spec. nov.

Forewing: white with a yellow tinge, crossed by three strongly waved bright red lines, the veins also red; at the lower end of cell a large round snow-white spot, with a white dot above it at the top of the discocellular; costa and a submarginal band somewhat broadly brown, the brown reaching in the middle between first and outer line to the median vein, surrounding the white spots and running as a broad streak to margin between veins 3 and 5; marginal area narrowly yellow, with a brown-red marginal line; fringe yellow, interrupted in middle by the brown streak.

Hindwing: with the whole space, except on extreme inner margin, between first and outer lines brown; the lower white spot smaller and the upper larger than on forewing, the brown marginal band almost touching margin, and broad at anal angle; fringe yellow, interrupted by brown at middle.

Underside yellowish pink, the hindwing paler with a marginal border, the discocellular spots showing pale.

Head, thorax, and abdomen variegated red and yellow, the head parts brown-red, the patagia and thorax yellow.

Expanse of wings: 17 mm.

1 ♂ from R. Cayapas, N.W. Ecuador (Flemming & Miketta).

50. *Tricentra flavimargo* spec. nov.

Forewing: dull pink, with a grey suffusion and dusted with black atoms, especially towards and along inner margin; the lines dark, but indistinct; first curved at one-fourth; outer from two-thirds of costa to two-thirds of inner margin, outcurved in middle and lunulate-dentate, projecting between veins 3 and 4; submarginal parallel to outer line; marginal area narrowly bright yellow, more broadly at apex, the fringe yellow; a yellow vertical mark on discocellular edged with brighter pink.

Hindwing: similar; the discocellular with a minute white dot at each end; marginal red dots at ends of veins.

Underside dark reddish grey, pinker towards costa of forewing and hindmargins of both wings; both discocellulars marked by a yellowish white streak; the yellow at margin quite pale.

Head, thorax, and abdomen grey-pink; abdomen beneath yellow.

Expanse of wings: 16 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, August 1903 (de Mathan).

SUBFAMILY HYDRIOMENINAE.

51. *Anapalta flavilucens* spec. nov.

Forewing: yellowish white, grey-tinged; the markings fuscous and blackish; basal patch dark fuscous, its outer edge curved; central fascia with outer edge excurved and dentate-lunulate, its inner edge nearly straight; its costal area above vein 6 dark fuscous, the lines hardly visible; the lines alone are visible in the middle of wing, and again become more or less obscured in a grey suffusion at inner margin; a large black cell-spot; the bands before and beyond the central fascia traversed by a grey line, which in the inner band is on the costa expanded into a grey blotch; marginal area blackish fuscous, the submarginal line being denoted merely by the black lunules which precede it; a dark marginal line interrupted at the veins; fringe grey-brown.

Hindwing: more yellowish; a dark cell-spot; marginal border dark grey, separated from the pale grey base by a broad curved submarginal yellow band.

Underside dull yellowish, with the costa of forewing, the outer edge of median bands, the cell-spots, and outer margins dark fuscous.

Head, thorax, and abdomen yellowish, speckled with grey.

Expanse of wings: 30 mm.

1 ♀ from R. Colorado, Pern, 2500 ft., August, September 1902 (Watkins).

Near *A. gelatina* Warr. (*Epirrhoë*), but much paler.

Antepirrhoë gen. nov.

I propose this new genus for those few species, otherwise like *Epirrhoë*, in which the discocellular of hindwing is biangulate with the radial rising from the lower angulation, instead of oblique with the radial from the centre.

Type: *A. delimitata* Warr. (*Epirrhoë*).

Larentia homophana Hmps., *F. B. I.* iii. p. 369, and *L. latifusata* Wlk. xxv. p. 1298, will be included.

52. *Antepirrhoë vacillans* spec. nov.

Forewing: dull olive-green; the markings deeper green and fuscous; basal patch, formed of four dark curved lines, projecting at middle; central fascia broad on costa, occupying middle third of wing; its inner edge oblique outwards to submedian fold, then bent at a right angle, to inner margin near basal patch; outer edge inangled beyond cell, and projecting at vein 4, less so at vein 6, irregularly crenulate throughout, to two-thirds of inner margin; the lower extremity on inner margin forked, containing a blotch of paler ground-colour; a similar blotch above median vein, containing the cell-spot; submarginal line lunulate, preceded by a square dark blotch at costa and a smaller one beyond cell; the lunules below filled up in part with dark, and all tipped outwardly with white, followed by short dark streaks to margin; a dark triangular apical blotch, above an oblique pale streak from apex; black marginal dots in pairs; fringe olive-green, with dark middle line and dark mottling beyond veins; costa dotted with black.

Hindwing: greyish white, with a dark grey dentate-lunulate submarginal shade between two paler bands; a partial black marginal line; fringe pale grey.

Underside greenish grey; markings of forewing darker, the costa broadly yellowish: hindwing paler, with dark cell-spot, fine lunulate-dentate dark post-median line, and cloudy submarginal line.

Head, thorax, and abdomen greenish; anal tuft ochreous, with a black spot at base; the three preceding segments darker on dorsum.

Expanse of wings: 44 mm.

2 ♂♂ from Bolivia, between Sorato and Mapiri, 1000 m., August 1900, dry season (Simons).

Aperusia gen. nov.

Forewing: elongate; costa faintly curved; apex prominent; hindmargin obliquely curved, slightly indented above anal angle.

Hindwing: narrow; truncate at apex, indented before anal angle, the hindmargin straight between veins 7 and 3.

Antennae (♂) simple, lamellate; palpi porrect, laxly scaled, resembling those of *Psaliodes*; tongue and frenulum present.

Neuration: forewing, cell half as long as wing; discocellular vertically concave; median vein shortly inflected at end; the second median nervule from the bend shortly before the third, the first close before second, and curved downwards at origin; vein 5 from rather below the middle of discocellular; 6 shortly stalked with 7, 8, 9; 10 anastomosing with 11, and again with 8, 9, forming a double areole: hindwing, costal and subcostal anastomosing for middle third of cell; 6, 7 from upper angle, not stalked as usual; discocellular deeply inangulate, and again angled outwards just above lower end, vein 5 from this bend, and therefore close above 4; 3 shortly before 4, 2 at two-thirds.

Type: *Aperusia punctistriata* spec. nov.

The only species superficially resembles the yellow species of *Perusia*.

53. *Aperusia punctistriata* spec. nov.

Forewing: pale yellow, glossy; the lines dark brown; a patch of brown scales at base of inner margin; inner line quite close to base, outcurved to median vein, and quite faint below it; second line interruptedly double, from one-third of costa to two-fifths of inner margin, angled outwards in cell and on submedian fold, inwards on the veins; outer line also double, from two-thirds of costa to two-thirds of inner margin, angled outwards on veins 4 and 6; both lines represented in parts by brown dots, which also form irregular series in the space between them and in those on either side; a submarginal line of brown lunulate blotches between the veins; marginal spots in pairs at the vein-ends; fringe yellow; cell-spot obscure, pale brown.

Hindwing: pale yellow, without any markings.

Underside dull yellow, with brownish speckling in the forewing, the markings of the upperside showing through.

Head, thorax, and abdomen pale yellow; the patagia in part and the meta-thoracic tuft dark brown; palpi speckled with brown; forelegs mottled with brown.

Expanse of wings: 35 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., January 1902, dry season (Ockenden).

Cirrhorheuma gen. nov.

Wings narrow and elongate : neuration as in *Perisoma* ; palpi short, decumbent, rough-haired above and below ; forewing of ♂ beneath with the cell occupied by a bed of curled hairs.

Type : *Cirrhorheuma pallidimargo* spec. nov.

54. Cirrhorheuma pallidimargo spec. nov.

Forewing : grey suffused with fuscous, the hindmargin becoming whitish ; lines thick, brownish fuscous, with fine pale edging ; first close to base, curved, with pale outer edge ; second sinuous from one-fourth of costa to one-half of inner margin, inwardly edged with pale ; outer line from two-thirds of costa to close before anal angle, strongly curved outwards to vein 3, then sinuate and vertical, outwardly pale-edged ; submarginal line white, bluntly projecting below vein 6, and approaching outer line at anal angle ; marginal area beyond it, except a costal blotch, white with grey clouds ; a row of dark dashes along margin between the veins ; fringe whitish, chequered with grey ; cell-spot round, black ; all the lines are thickened and blacker towards inner margin, and their pale edgings white at costa ; in the brown central fascia can be traced beyond the cell-spot a curved median line, which is preceded on inner margin by a pale upright blotch.

Hindwing : smooth, leaden grey, with dark cell-spot and traces of two dark lines on inner margin at anal angle ; marginal line and fringe as in forewing.

Underside brownish grey, darker along costa of forewing, where the beginnings of the lines are shown : apex of forewing pale brown-grey ; the tuft of hairs in cell blackish : hindwing paler, with two dark outer lines and cell-spot.

Head, thorax, and abdomen fuscous.

Expanse of wings : 24 mm.

1 ♂ from Agualani, S.E. Peru, 10,000 ft. (Ockenden).

55. Coenocalpe euboliata spec. nov.

Forewing : dull grey ; the lines and shading dark fuscous ; a band of three fine dark lines limits the basal patch, the outermost angled on subcostal vein ; inner edge of central fascia formed by an inwardly concave thick fuscous shade at one-third ; outer edge from four-fifths of costa to two-thirds of inner margin, bluntly bulged at middle, preceded by a dark fuscous shade paling inwards, and traversed by four dentate-lunulate darker lines, all, as well as the two lines following the inner edge, slenderly but distinctly marked on costa ; the fascia is limited outwardly by a pale band with white linear inner edge, a grey central line, and with an inwardly dentate-lunulate dark grey line on its outer edge ; marginal area dark grey, traversed by a pale waved submarginal line ; a dark grey oblique streak from apex ; a fine dark marginal line ; fringe grey ; cell-spot black, distinct.

Hindwing : paler ; the lines as in forewing, but without dark fuscous shading.

Underside rosy grey, dappled with dark grey ; all the lines marked in brown-grey ; marginal area with whitish submarginal spots.

Head, thorax, and abdomen reddish grey, the face and palpi darker.

Expanse of wings : 32 mm.

1 ♂ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden).

56. *Coenocalpe ignifera* spec. nov.

Forewing : dark cinereous below the median vein as far as inner edge of central fascia, and narrowly along hindmargin ; the base of wing to one-fourth of inner margin and the whole area above median vein to outer line and the wavy outer line itself bright brick-red ; basal line double, acutely angled in cell, fuscous ; the rest of the lines appear only as dark blotches on costal edge ; in the lower half of central fascia below median can be seen three dark waved lines and three black lines close together beyond the red base ; beyond the red exterior line is a submarginal line marked by white lunules, that between 3 and 4 forming a round white spot ; pairs of dark dots along margin at ends of veins ; fringe grey ; cell-spot dark.

Hindwing : paler cinereous, towards costa whitish, with traces of curved wavy darker grey lines ; outer band dull brick-red, swollen into a patch above anal angle ; marginal cell-spots and fringe as in forewing ; a small cell-spot.

Underside grizzled grey, with darker cross-lines ; forewing with inner margin blurred grey ; cell and outer band dull red ; submarginal spot between 3 and 4 white ; hindwing with base and submarginal band reddish ; cell-spots black.

Head, shoulders, and abdomen dark cinereous ; thorax, patagia, and basal segment of abdomen brick-red ; legs and palpi dark grizzled grey.

Expanse of wings : 30 mm.

1 ♀ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden).

Hindmargin of forewing bluntly bent at vein 3.

57. *Coenocalpe nitida* spec. nov.

Forewing : white, tinged in parts with bluish grey ; the costal streak and cross-markings fuscous, sometimes mixed with pale brown ; basal patch quite small, followed by a narrow band, the lines forming them acutely angled on subcostal, then oblique basewards ; inner edge of central fascia formed of three brownish fuscous oblique lines parallel to the hindmargin : the outer edge much wider, formed of three parallel waved dentate-lunulate grey lines, filled up above median with dark brownish fuscous, below with pale olive-grey, the central area remaining whitish ; the innermost of the outer three lines blackish, and projecting basewards above median vein as a dark cloud touching the black cell-spot ; the marginal lines distinct only towards costa, where the central fascia is followed by a thin white line, and the submarginal line commences white, the space between these being filled in with brown-black, and a brown-black streak running from apex to meet it, the space below median remaining white ; marginal area narrowly blue-grey ; an interrupted fine dark marginal line : fringe white, the basal half mottled olive-brownish.

Hindwing : white, with traces of all the lines, which are well marked only on inner margin ; marginal area narrowly grey ; fringe as in forewing.

Underside whitish ; in forewing suffused, except on inner margin, with dark

grey, all the lines darker and clear above middle; the submarginal white throughout, preceded by a dark band: hindwing white, with the markings olive fuscous.

Head dark fuscous; thorax and patagia whitish or pale brownish; abdomen grey, with the black lines of hindwings shown across dorsal segments.

Expanse of wings: 22 mm.

A considerable number from Huancabamba, Cerro de Pasco, Peru, 6000 to 10,000 ft. (Böttger).

Forewing pointed at apex; hindmargins crenulate.

58. *Deinoptila penicula* Dogn.

The ♀ of this species differs from the ♂ in several particulars. The cross-lines of the forewing are much more developed and regular, and in consequence the dark spaces of ground-colour are much less conspicuous, being, in fact, restricted to one in middle of wing beyond basal patch and another on hindmargin above middle; the double cross-lines throughout are filled in with dull olive-green, while the vinous red edges and the red veins are alike more prominent: the fringe is bright vinous throughout along basal half, and chequered with dark only in the outer half.

The hindwing above is wholly cinereous, the fringe and apex being bright vinous. Underneath the hindwing is vinous, with the basal area below the subcostal vein, two curved median bands, and a broad submarginal band cinereous; in forewing the costa is vinous red from near base to the middle; the outer line towards costa is vinous, and there is a subapical and apical vinous spot, the latter mixed with pale yellow.

Expanse of wings: 40 mm.

One example from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

59. *Erebochlora albistrotta* spec. nov.

Forewing: dark sage-green, with the markings black-green, all very much as in *E. chamaeleonis* Schaus, but much less distinct, owing to the darkness of the ground-colour; the veins beyond middle, the two intervals on each side of the subapical costal blotch, and an oblique apical streak alone pink; the outer half of cell white, the white not quite reaching the subcostal vein; fringe pale and dark green; small pink spots on margin between veins.

Hindwing: wholly smoky fuscous; fringe fuscous, with paler basal line.

Underside of both wings dark greenish fuscous; apex of forewing with a few pale scales only; costa of forewing dark fuscous; the intervals rosy pink, but none extending below subcostal vein; veins of hindwing and course of postmedian line slightly pink-tinged.

Head and thorax dark green and blackish, mixed with dull rosy scales; abdomen cinereous.

Expanse of wings: 46 mm.

1 ♂ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden).

This may be an extreme form of *chamaeleonis* Schaus.

60. *Eriopygidia subrubescens* spec. nov.

Forewing: olive-drab; the markings dark olive; the lines black; basal patch crossed by three curved interrupted lines and tinged with olive; central fascia deep olive, edged by black lines and traversed by another in the middle, all three starting from large velvety black costal blotches, containing a large black cell-spot and some black scales on submedian fold; bands on either side pale, with a waved olive traversing line; three black costal streaks before apex, from the first of which an olive dentate-lunulate line runs to anal angle, the second and third representing the two submarginal shades marked chiefly by some black scales and a dark olive cloud beyond cell, the whole of the marginal area being tinged with olive; a black marginal line beyond cell only; fringe olive with black spots at veins.

Hindwing: olive-drab, tinged with olive towards margin, with obscure cell-spot and traces of two curved lines beyond middle, plainest above anal angle.

Underside dull reddish; in forewing the central fascia, cell-spot, costal spots and chequering of the fringe darker; hindwing with dark postmedian line.

Head, thorax, and abdomen olive-drab; palpi with the base of each segment black; fore and middle tarsi spotted with black.

Expanse of wings: 30 mm.

1 ♂ from Cuzco, Peru, January 1901 (Garlepp).

In appearance like a *Sparganina*, but with the long palpi and strongly developed anal tufts of *Eriopygidia*.

GENUS *Entephria* Hüb.

The genus *Entephria* Hüb. Verz. p. 332, type *flavicinctata* Hüb. (Geom. 354 (Verz. No. 3196)), has the priority of *Glaucoperyx* Hüb., type *caesiata* Schiff. (Verz. No. 3198).

61. *Entephria ochribasis* spec. nov.

Forewing: white, tinged (in parts with blackish grey, olive-brown, and ochreous; the markings black; central fascia with the inner edge at one-third, vertical but strongly crenulate, being in fact angled outwards on the three veins and on the folds; the outer edge from costa below two-thirds to two-thirds of inner margin, projecting prominently at veins 4 and 6, and incurved between, and inbent also on submedian fold; a dark line following the inner edge and preceding the outer with a fainter line between, the bands between them filled up with olive-brown, the central space with blackish grey and ochreous, containing the black cell-spot; band before fascia whitish with a black line; basal area ochreous edged by a black line parallel to inner edge of fascia and crossed by a double black line; pale band beyond central fascia white and ochreous divided by a black line; submarginal line pale, waved, preceded by three irregular black lines, coalescing below and forming dark blotches at costa, beyond cell, and above inner margin; marginal area peppered black and grey, the veins olive-brown; pairs of black spots along margin at ends of veins; fringe whitish, tinged with ochreous, with a dark middle line and blackish chequering beyond veins.

Hindwing: whitish, suffused with smoky grey, with pale submarginal and postmedian waved lines between grey shades; marginal spots as in forewing; fringe white with grey dividing line.

Underside of forewing with the dark markings showing through; a square

black apical blotch, traversed by a submarginal line of whitish spots: hindwing grey-speckled, with traces of grey waved lines and a dark cell-spot.

Head, thorax, and abdomen a mixture of black, white, and ochreous scales, the abdomen dorsally spotted with ochreous and with an ochreous band behind metathorax.

Expanse of wings: 36 mm.

1 ♀ from Tucuman, Argentina, May 1902 (Dinelli).

The distribution of the ochreous tints is variable; in the right wing extending along the costa throughout, and in the left stopping at the central fascia; the ends of veins 2, 3, 4 are also ochreous in the right wing, but olive-brown in the left.

Lasiophanes gen. nov.

A development of *Perizoma*, parallel with *Cirrhorheuma*, but, whereas the latter has a bed of rough hair on the underside of the forewings, the present genus has the whole of the upperside of the hindwings, except towards apex, covered with rough hairs, developed towards anal angle into curved wisps. Palpi shortly rostriform; antennae simply lamellate.

Type: *Lasiophanes rufisticta* spec. nov.

62. Lasiophanes rufisticta spec. nov.

Forewing: ashy grey; the lines blackish; a short line close to base and two very fine ones in the band beyond; inner edge of central fascia marked by a black line from one-third of costa to one-fourth of inner margin, bent below costa, this edge followed by a broad grey band with outer wavy edge; outer edge of central fascia from two-thirds of costa, oblique outwards with a slight bend at 6 to vein 4, then hardly oblique to anal angle; from costa to median this edge is preceded by blackish suffusion and two parallel dark lines, and edged with white; below the median the whole fascia is grey, with a pale central space and some whitish in cell; submarginal line fine, waved, white, preceded above middle by blackish oblong streaks between the veins; the veins themselves, vein 6 broadly, bright buff; vein 4 also narrowly buff from its origin at angle of cell; marginal area grey; an interrupted dark marginal line; fringe grey mottled with darker.

Hindwing: wholly shaggy dark grey.

Underside dark grey except along costa and across apex, where the ground-colour is pale ashy grey, and the commencement of all the lines dark; hindwing pale grey with darker strongly curved transverse lines, of which the postmedian is marked with blackish points on veins.

Head, thorax, and abdomen grey; the collar, shoulders, and patagia showing paler.

Expanse of wings: 24 mm.

2 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

The dark scales on the underside of forewing are rough and coarse over an area corresponding to the roughened surface of the hindwing.

63. Ochyria amaura spec. nov.

Forewing: pale ashy grey, with dark grey transverse lines and shades, all blackish along costa; basal patch small edged by a dark band; central fascia broad at costa, the edges waved and dark, with three darker cross-lines, and the

usual two projecting teeth externally below middle; submarginal line waved, pale grey; the bands on each side of central fascia pale grey, with a darker line along middle; cell-spot blackish; pairs of marginal black spots at the vein ends; fringe grey, chequered with darker.

Hindwing: pale grey, with dark cell-spot, and indications of the cross-lines, plainest along inner margin; fringe chequered.

Underside with the markings darker and plainer, especially on hindwing.

Head, thorax, and abdomen grey.

Expanse of wings: 26 mm.

4 ♂♂ from Quito, Ecuador (W. Goodfellow).

An inconspicuous insect: the antennae of the ♂ are deeply subserrate and pubescent.

64. *Orthonama pudibunda* spec. nov.

Forewing: pale stone-grey, dusted with brownish grey; crossed by numerous pale brown fine lines all parallel to hindmargin; the edges of the central fascia formed by two broad brown lines, from one-third and two-thirds of inner margin, the inner becoming all but obsolete in cell before the black cell-spot, in reality curved inwards to costa, the outer running to costa at five-sixths, but indistinct above vein 6; the inner is preceded and the outer followed by a fine whitish line; this latter is followed by a pale band of ground-colour from apex, marked with dark dashes on veins; also from the apex a grey shade rises, running to inner margin before anal angle, in which a waved white submarginal line is visible; pairs of black marginal spots at the vein-ends; fringe stone-grey with a dark dividing line and another at tips; costa at base brown.

Hindwing: paler, dusted with brownish only along inner margin, where also the outer brown line and a slight submarginal shade are visible; cell-spot small.

Underside of forewing suffused with grey, dark grey to outer line; hindwing grey speckled; all the lines and cell-spots marked; both wings flushed with pink.

Head, thorax, and abdomen like wings, the face tinged with pink; dorsal dark bars on abdomen; legs grey-speckled, externally fuscous.

Expanse of wings: 30 mm.

2 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

In markings almost identical with the next species, but altogether differing in colour.

65. *Orthonama straminea* spec. nov.

Forewing: straw-colour, crossed obliquely by a series of very fine brown rippled lines parallel to hindmargin, and by two equally oblique thick brown shades at one-third and two-thirds, representing the edges of the median fascia; in the basal area the fine lines are accompanied by some grey dusting and reach the costa, in the median area they become obsolete, like the inner shade, at the cell; the outer brown shade reaches vein 7 and the lines of the marginal area run through to the costa, the last but one being thickened and running into apex; a minute dark cell-spot; fringe concolorous, with a dark dividing line, and some minute dots in pairs along margin at end of veins.

Hindwing: whiter, with two fine submarginal lines and a broad outer line pale brown, reaching only from inner margin to cell.

Underside straw-colour with only vestiges of lines ; costa of forewing brown at base.

Head, thorax, and abdomen straw-colour, the last dotted with dark on dorsum.

Expanse of wings : 26 mm.

1 ♂ between La Paz and Sorato, Bolivia, 2600 m., August 1900 (Simons).

66. *Perizoma albirasa* spec. nov.

Forewing : white ; the basal and apical areas dull brown ; basal patch small, edged by a pale vertical line, and the band following, with brown ; the inner edge of the central fascia sinuously vertical brown, edged basewards by a black line, the rest of the central fascia white, limited externally by a brown-black streak running obliquely outwards from three-fifths of costa to vein 4, then incurved and marked only by dark spots on veins, followed at costa by a fine white and a second dark line ; marginal area brown, traversed by a whitish submarginal line, and broadly interrupted to margin by the white ground-colour between veins 3 and 4 ; an interrupted black marginal line in costal half of wing ; fringe white with dark chequering.

Hindwing : pure white, with slight dark marginal line and traces of lines above anal angle ; fringe white.

Underside white, in the forewing discoloured with grey and with the dark markings of the upperside partly showing through ; cell-spots black.

Head, thorax, and abdomen grey-brown, the dorsum blackish ; collar and anal segment whitish.

Expanse of wings : 22 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., December 1901, wet season (Ockenden).

67. *Perizoma carnepecta* spec. nov.

Forewing : flesh-colour, glossy ; tinged with grey towards hindmargin ; basal patch blackish, its edge from one-third of costa to one-half of inner margin. slightly paler margined ; a black costal tooth at two-thirds, from which a dark line runs quite shortly outwards to vein 6, where it bends inwards and becomes obsolete ; a very faint pale submarginal line, preceded by a large black costal blotch and followed by a smaller one, as in the following species ; fringe dark grey, with squarish dark spots beyond veins in basal half ; a slight grey cell-spot.

Hindwing : whitish with slight flesh-coloured tinge, grey along hindmargin with black spot at anal angle ; a grey cell-spot ; fringe as in forewing.

Underside shining dark cinereous ; the black markings of upperside well shown ; a black cell-spot ; costal area reddish : hindwings speckled with grey in basal half, with black cell-spot and pale curved outer line.

Head, thorax, and abdomen except anal segment black ; forelegs black.

Expanse of wings : 19 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

This species appears distinct from the succeeding one, *P. fallax*, differing both in coloration and markings.

68. *Perizoma fallax* spec. nov.

Forewing: chalk-white, rather glossy; in the outer half tinged with pale grey and brownish; basal patch purplish fuscous, crossed by three deeper lines, the outer edge oblique and irregular from one-third of costa to two-fifths of inner margin; a dark blotch at middle of costa, sometimes double, from which a double line runs obliquely outwards to vein 6, where it is bluntly bent and turns obliquely inwards, lunulate-dentate, but often very obscure and marked with dark dots on the veins; the inner of the two arms runs to a small dark blotch at middle of inner margin (which, in one case, is confluent with basal blotch); the outer to another blotch before anal angle; a whitish waved submarginal line, most distinct on costa, where it is preceded by a large black blotch reaching to vein 6, and followed by a smaller one to apex; between veins 2 and 3 a bluish grey longitudinal blotch reaches from middle line to hindmargin; a black cell-mark within the curve of the double line: marginal line interrupted; fringe white with rather large dark spots in the basal half beyond the veins.

Hindwing: dull white, clouded with grey along hindmargin, and with a small black blotch at anal angle; a grey cell-spot and traces of outer lines.

Underside of forewing dark grey, shining; paler beyond middle of costa, with black cell-spot; of hindwing white with basal half speckled with grey; a black cell-spot, and dotted curved outer line.

Head, thorax, and abdomen blackish; anal segment of abdomen whitish; abdomen below legs whitish.

Expanse of wings: 18 mm.

2 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

Evidently allied to *P. basiplaga* (*Psaliodes*) Schaus from Mexico.

In a ♂ and ♀ from Santo Domingo, Carabaya, S.E. Peru, which are probably referable to this species, the dark middle cloud is much less developed.

69. *Perizoma ochritincta* spec. nov.

Forewing: dull grey with the markings darker, but very indistinct; basal area small, limited and crossed by grey lines; paler band before central fascia broad, also traversed by grey lines; inner edge of central fascia from one-third of costa to two-fifths of inner margin; outer from quite two-thirds of costa to three-fourths of inner margin, projecting at veins 6 and 4, and strongly dentate-lunulate throughout, the fascia crossed by darker lines; area beyond it with the usual lines all very obscure; the cell and space beyond and the submedian interval are slightly tinged with ochreous-yellow scales, a spot at end of cell being noticeable. Fringe (worn) grey.

Hindwing: dull pale grey, without any distinct markings.

Underside dull cinereous.

Head, thorax, and abdomen all dark grey, the abdomen with paler rings.

Expanse of wings: 22 mm.

1 ♂ from Huatuxco, Vera Cruz.

The antennae are thick, lamellate and faintly pubescent.

A very dull and obscure-looking species, but apparently distinct; it bears some resemblance to dark specimens of *P. muscosata* Warr., which is probably the ♀ of *P. fasciolata*, from Argentina, but the forewing is longer and narrower.

70. *Plerocymia? rhombifascia* spec. nov.

Forewing: olive-fuscons; the basal patch, central fascia, a large triangular costal blotch before apex, and an interrupted submarginal band, all of this colour; edge of basal patch vertical, with a faint bend outwards in middle; central fascia with inner edge oblique from two-fifths of costa to beyond middle of inner margin, concave outwards between the median and the subcostal and submedian; the outer edge oblique outwards from beyond middle of costa to vein 5, there bent at right angles and oblique to inner margin where it joins the inner edge; space between basal patch and central fascia broad, its centre filled up with greyish olive-fuscons, edged on each side by a double pale line, of which one arm is white and the other flesh-colour; the outer edge of the fascia is followed by a similar double line, the outer flesh-coloured area of which is doubled below the bend; on both edges these white lines form sharp teeth on the veins; from the apex a broad greyish flesh-coloured streak with whitish lunulate-dentate edges curves to margin below vein 4, touching the edge of the central fascia at the bend; marginal black curves between veins, separated by ochreous spots at the vein ends and edged inwardly with ochreous from apex to middle; below the middle there are pale triangular marks at the ends of the veins; fringe fuscons.

Hindwing: grey, with traces of pale sinuous postmedian and submarginal lines; cell-spot dark; a row of ochreous spots at the vein ends; fringe grey.

Underside olive-fuscons, freckled with pale, with all the pale cross-markings obscurely shown.

Head, thorax, and abdomen olive-fuscons, the head parts, especially vertex and palpi, blackish, the abdomen paler, more cinereous; collar ochreous.

Expanse of wings: 46 mm.

1 ♀ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden).

In the absence of the ♂ the position of the species is doubtful; the hindwings are strongly but bluntly produced at vein 7.

71. *Psaliodes marmorata* spec. nov.

Forewing: pale olive; the lines velvety black, edged with white crescents; first line at one-sixth, angled outwards on median vein and again on submedian, edged outwardly with white, inwardly diffused into dark olive; inner edge of central fascia at two-fifths, strongly curved outwards above median, less strongly below, the lower half nearer base than the upper, edged inwardly with white and outwardly diffuse; outer edge from two-thirds of costa, obliquely biconcave outwards, angled on vein 6, and acutely on 4 near hindmargin, then strongly incurved to three-fourths of inner margin, outwardly limited by white crescents with a black edge and inwardly diffused; the centre of basal patch, of band before fascia, and of fascia itself bleached; cell-spot angular, black in the white space; submarginal line whitish, broken up; costa dotted minutely with black; a slight reddish tinge along base of subcostal vein; fringe pale olive, vividly mottled with black beyond veins.

Hindwing: pinkish ochreous, with the dark markings of underside showing through.

Underside cream-colour, tinged with pink and ochreous; forewing with cell and a streak below it dull brick-red; costal streak ochreous, blotched and striated with

olive-black ; the outer line to middle and the submarginal blackish olive edged with white ; the other markings only showing through ; cell-spot black in a pale space : hindwing with dark olive antemedian, thick dentate postmedian, and diffuse submarginal lines, all edged outwardly with white ; the margin pinkish ochreous ; a large dark olive cell-spot ; fringe yellow, mottled with black, and with a fine black line at base.

Head, thorax, and abdomen olive-ochreous ; base of abdomen whitish, the remaining segments on dorsum dark olive ; the anal tufts ochreous ; legs and palpi ochreous, externally olive.

Expanse of wings : 26 mm.

1 ♀ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden).

72. *Pterocypha simplicata* spec. nov.

Forewing : grey, with a slight rufous and olive tinge in places ; basal patch and central fascia dark olive-fusous ; basal patch small, its edge vertical ; inner edge of fascia also nearly vertical, slightly curved only at costa, at one-third ; outer edge oblique outwards and forming a sharp projection on vein 4, then incurved and vertical to two-thirds of inner margin ; the limiting bands composed of three blackish curved lines, the middle of the fascia on costa forming a square grey blotch ; cell-spot black, hidden in the dark suffusion ; traces of a pale submarginal line preceded by a dark cloudy shade, with lines marked by dark dashes on veins ; a dark lunulate marginal line ; fringe grey, mottled with black.

Hindwing : rufous-fusous, the hindmargin darker, preceded by a paler band beyond the angled dark outer line, which is preceded by three other lines and a cell-spot ; the whole basal area darker.

Underside cream-colour, with black cell-spots and an outer angled band of three dark lines ; forewing with broad black marginal band to vein 2, complete to vein 4, then interrupted, the apex narrowly pale ; hindwing with the band submarginal and slighter ; a black spot on costa of forewing at one-third.

Face and palpi black, the face with centre grey ; thorax and abdomen ochreous-grey, the dorsum grey-tinged and with two interrupted darker lines ; underneath cream-colour.

Expanse of wings : 34 mm.

1 ♂ from Suncha Corral, Santiago del Estero, Argentina (Steinbach).

The rough curled hairs of forewing are restricted to the upper half of cell along subcostal vein.

73. *Spargania nigrifasciata* spec. nov.

Forewing : olive-green in basal third, the central fascia blackish green, marginal third white ; the basal patch crossed by three curved and waved dark lines ; central fascia with inner edge vertical and irregularly waved, the outer sharply projecting above vein 6 and below vein 4, and more bluntly below vein 3 ; apical area above vein 4 olive-green, crossed by darker shades and a waved pale submarginal line ; a few dark clouds towards anal angle ; cell-spot black.

Hindwing : white, slightly greyish towards base, and with an obscure cell-spot ; fringe white.

Underside of forewing to outer edge of fascia greenish grey, the apical area the

same; the rest white; hindwing white speckled with grey as far as a bisinuate outer line, with traces of a grey submarginal line.

Head, thorax, and abdomen below olive-green; abdomen above blackish.

Expanse of wings: 32 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., January 1902, dry season (Ockenden).

SUBFAMILY TEPHROCLYSTIINAE.

74. *Eucymatoge versiplaga* spec. nov.

Forewing: chalk-white, the markings black; basal patch quite small, edged by a vertical black line; the broad band following with the centre pale grey; inner edge of central fascia slightly curved, from one-fourth of costa to one-third of inner margin, black, starting from a black costal spot and swelling out into a dark grey triangular blotch above and below the median vein; cell-spot black, distinct; outer edge of fascia from a black costal spot just beyond middle, oblique outwards and bent on vein 6, then lunulate-dentate inwards to three-fourths of inner margin, blotched at vein 6 and on submedian fold; submarginal line pale, obscure, preceded by blackish blotches at costa, beyond cell, and above anal angle; the marginal area pale grey, darker beyond cell; between veins 2 and 4 all the outer dark markings are obliterated by the white ground-colour; marginal line black, interrupted at the veins; fringe white, with black chequerings beyond veins.

Hindwing: dull grey, with traces of darker cross-lines; fringe as in forewing.

Underside of both wings dark grey or blackish; the central area of forewing paler, with a black costal spot and traces of lines; hindwing with five or six dark grey waved lines and a black cell-spot on a whitish ground.

Head and abdomen whitish; thorax and basal and anal segments of abdomen black; legs whitish; forelegs blackish in front.

Expanse of wings: 22 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902, wet season (Ockenden).

75. *Tephroclystia albiceps* spec. nov.

Forewing: white, with a faint greenish tinge, speckled with black; the basal third and an apical patch filled up with blackish fuscous; inner edge of central fascia at one-third, nearly vertical, formed by a band of two lines, the interspace filled in with dark, starting from a triangular costal blotch, and bent inwards towards inner margin; the pale band preceding with its central thread is only plain at costa, the rest being obscured by the dark suffusion which covers the basal area; outer edge of central fascia from three-fifths of costa waved obliquely outwards, bluntly bent on vein 6 and again below 4, then oblique inwards, preceded by a black line on costa, which is broken up below; cell-spot obscurely blackish; submarginal line very fine, dentate, only distinct through the dark apical area, and at anal angle preceded by a small blackish blotch; marginal line black, interrupted at the veins; fringe whitish, with thick blackish mottling; from the upper angle of the central fascia a red-brown streak runs towards apex, and the basal area is irregularly tinged with reddish.

Hindwing: blackish, with traces of indistinct lines marked on veins by black dashes; a dark cell-spot; marginal line and fringe as in forewing.

Underside smoky blackish, with indistinct traces of the lines; the pale bands marked on costa by white dashes.

Palpi, thorax, and abdomen black; face, vertex, collar, shoulders, base of patagia, and prothorax bright cream-colour; legs black, with the joints whitish.

Expanse of wings: 18 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

The contrast between the black palpi and white head will distinguish the species at once.

76. *Tephroclystia fumifascia* spec. nov.

Forewing: dull brownish flesh-colour, slightly speckled, and with traces of oblique cross-lines, bent or angled in cell and beyond; a smoky blackish blotch at base and another at apex; a smaller dark blotch at anal angle; basal blotch small, edged by a vertical black line; inner edge of central fascia from one-fourth of costa to about one-fifth of inner margin; both obscured by the dark cloud; outer edge of fascia from two-thirds of costa to two-thirds of inner margin, bent beyond cell and edged inwardly with blackish in upper half and again on inner margin; submarginal line fine, between darker shades; a dark marginal line; fringe brown.

Hindwing: with a dark line near base on inner margin; a dark cell-spot; the outer edge of central fascia marked by a thick brown band across wing; the rest as in forewing, but without the blackish clouds.

Underside paler, more ochreous, with dark cell-spots and lines.

Head, palpi, shoulders, base of patagia, and abdomen flesh-colour; thorax, tips of patagia, metathorax, and two basal segments of abdomen, a ring on fifth segment and the anal segment blackish; tips of palpi darker.

Expanse of wings: 18 mm.

2 ♀♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October, dry season, and November, wet season 1902 (Ockenden).

Neither specimen is really fresh.

77. *Tephroclystia latitans* spec. nov.

Forewing: pale greenish grey, powdered with olive scales; the shadings olive; basal patch small, edged by a fine deep black line; central fascia occupying middle third of costa, with both edges uniformly curved parallel to margin, formed of thick confluent olive bands, leaving a slightly paler central space containing a dark cell-spot; submarginal line pale between darker olive shades; a dark marginal line interrupted at the veins; fringe grey, mottled with olive.

Hindwing: similar, but all the markings less definite.

Underside whitish, with the bands and markings olive.

Head, thorax, and abdomen grey, varied with olive; basal segment of abdomen with a black ring; patagia with long black-tipped spatulate scales.

Expanse of wings: 18 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

The paler grey interspaces have a slight bluish tint.

SUBFAMILY EUCESTIINAE.

78. *Ameria latiorata* spec. nov.

Differs from *A. incaria* Wlk. in having the apex of forewing broadly and the hindmargin narrowly black, as well as the fringes; also the hindmargin of hindwing is narrowly black. In *incaria* Wlk. only the marginal line and fringe is black.

Expanse of wings : 24 mm.

1 ♂ from Purnio, November 1896 (Dr. Bürger).

79. *Cophocerotis casta* spec. nov.

Forewing : cream-white; costa above subcostal vein pale olive-brown; fringe concolorous.

Hindwing : cream-white.

Underside of forewing white, with the costa broadly olive-ochreous tinged with grey, the apex more broadly; a dark cell-spot; fringe pale, darker above middle; hindwing smeared all over with olive-ochreous, with pale longitudinal lines between the veins; a brown cell-spot and traces of brown postmedian and submarginal lines marked especially between the veins; some brown scales along hindmargin.

Head, thorax, abdomen beneath, and legs olive-ochreous; abdomen above whitish; antennae whitish.

Expanse of wings : 39 mm.

1 ♀ from Huancabamba, Cerro de Pasco, Peru, 6000 to 10,000 ft. (Böttger).

80. *Eudule annuligera* spec. nov.

Forewing : greenish brown, thinly scaled; some short red streaks from base; three red ringlets below costa, a large one just beyond middle, and a smaller one on each side; some red stains along inner margin, and a small ringlet on hindmargin between veins 2 and 3; fringe concolorous.

Hindwing : red, the apex narrowly, and the fringe black.

Underside similar, but with red spots instead of ringlets.

Face black above, white below; vertex, thorax, and abdomen like wings; middle segments of dorsum varied with red scales; pectus white; abdomen beneath ringed with white; legs black and white.

Expanse of wings : 22 mm.

1 ♂ from Upper River Toro, La Merced, August, September 1901 (Simons).

Near *leopardina* Druce and *arctiata* Warr.

81. *Eudule dioptoides* spec. nov.

Forewing : hyaline, with a bluish reflection; costal, inner, and hindmargins black, more broadly across apex; the veins black; a broad black bar across wing from middle of costal to the hindmargin between veins 2 and 3, both borders being thickened; a small orange spot below median vein at base of wing.

Hindwing : with costal and hindmargins black.

Underside like upper; costa of forewing at base, the basal spot of forewing and the base of hindwing dull orange.

Head, thorax, and abdomen blackish; pectus, palpi beneath, sides of face, and the inside of the legs whitish; underside of abdomen with an orange stripe.

Expanse of wings : 32 mm.

1 ♂ from San José, Costa Rica (Underwood).

The species is anomalous ; superficially it mimics *Diopsis* ; but the antennae are simply pubescent, and the venation is that of *Eudule* ; though the radial of the hindwing is very fine and scarcely more than a fold.

82. *Eudule flavinota* ab. *nigrata* nov.

Along with a ♀ of *E. flavinota*, agreeing exactly with the ♂ described by me in *Nor. Zool.* xi. p. 81, there has come a ♂ differing so much that it may very likely prove a distinct species. The ground-colour is deeper black ; the band from the middle of costa, instead of being orange, is pale lemon-yellow and twice as large ; of the orange line following and the orange streaks along the veins there is no trace ; with care a dark fulvous spot or two can be seen near base on the median vein, and a similar spot on the shoulders. The underside like upper, without trace of orange markings.

The examples are both from Limbani, Carabaya, S.E. Peru, 9000 ft., February and March 1904 (Ockenden).

83. *Eudule plurinotata* spec. nov.

Forewing : reddish orange ; the apical third black, the edge running from three-fifths of costa to hindmargin at vein 2, containing an elongated oval white blotch ; costa with two black spots, becoming yellowish before the apical third.

Hindwing : with a blotch at apex and smaller one at end of vein 3 black.

Underside like upper, but paler.

Palpi white, with black tips ; face white, with a black spot above ; vertex and collar black ; thorax and abdomen orange ; abdomen beneath and legs pale orange.

Expanse of wings : 27 mm.

1 ♂ from R. Coriahuira, Bolivia, 900 m., October 1900, dry season (Simons).

84. *Eudule rufithorax* spec. nov.

Forewing : orange-red in basal two-thirds, the curved edge running from just beyond middle of costa to inner margin close before anal angle ; the marginal area dull black, containing an oval whitish hyaline space extending from vein 7 to 3, crossed by veins 4 and 6, thickly marked in black ; the apical area has a blackish inner edge running from costa through the dark cell-spot and along vein 3, which is thickened ; veins 1 and 2 are also equally thick and black, with the intervals above them white, but without any inner dark edge ; from the top of the cell-mark a short black streak runs to costa parallel to outer margin, enclosing a small white streak above the cell-mark ; fringe blackish.

Hindwing : orange-red, with the apex and a marginal spot between veins 2 and 3 dull black.

Underside similar, the white markings more restricted.

Face and palpi below white ; vertex and palpi above black ; collar white ; thorax and abdomen orange-red, like wings ; a grey stripe on dorsum broadening towards anal segments ; abdomen laterally and beneath and legs reddish.

Expanse of wings : 23 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, July 1903 (de Mathan).

Closely allied to *E. bipennis* Wlk., but smaller, the whole thorax red.

85. *Lissopsis margarita* spec. nov.

Forewing : glossy pearl-grey, the apex pale bronzy-brown, traversed by an oblique white streak from apex, below the end of which is a pale brown wisp ; fringe brownish, white at anal angle.

Hindwing : the same, with the markings of underside showing through ; fringe white, with the tips brownish.

Underside of forewing tinged with fuscous, the brown markings darker ; hindwing bronze-brown with pearly-white markings ; a streak along costa narrowing beyond middle, where it emits a long outward tooth, and continuing narrow to apex ; a broad streak from middle of base through cell to below apex emitting a curved tooth to anal angle ; lastly, a streak below submedian fold from base to anal angle ; fringe white, tipped with brown ; fringe of inner margin brown.

Head, thorax, and abdomen pearl-grey mixed with pale olive-brown.

Expanse of wings : 36 mm.

1 ♂ from Challabamba, Pancartambo, Peru, 3000 m., January 1901 (Garlepp).

86. *Marmopteryx griseata* spec. nov. and ab. *subrufata* nov.

Forewing : dull olive-grey, crossed by six dark olive-grey curved and crenulated bands all edged with whitish grey ; three of these bands are antemedian, separated by a slightly wider interval from the three postmedian ; all are angled on the subcostal, and the outer three outcurved above ; a seventh band is apparent just before apex, below which it disappears ; the whole surface of the wing, especially towards costa, is dusted with pale scales ; fringe paler grey, with dark mottlings.

Hindwing : paler, with traces of median and two outer curved bands, slightly darker, lunulate-dentate.

Underside the same, but the bands confined to the costal half of forewing, which alone is dusted with pale scales ; hindwing with the whole surface thickly dusted with pale scales, and the bands entire.

Palpi, vertex, and thorax dark grey, dusted with pale ; abdomen grey, with pale segmental rings ; face ferruginous.

Expanse of wings : 44 mm.

1 ♂ between Sorato and Mapiri, Bolivia, 1000 m., August 1900, dry season (Simons).

ab. *subrufata* nov.

Like the type form, but with the costa of forewing broadly both above and below, and the whole of the hindwing beneath brick-red ; the position of the cross-bands differs ; the three antemedian are placed closer together near base, while the first and second of the postmedian series are more widely separated, and the seventh line can be traced across the wing, which also has dark marginal dashes at the end of the veins. The hindwing is paler, with the markings clearer. On the underside the whole of the forewing, except the red costal area, is blurred grey, without any pale dusting, while the bands of the hindwing and the basal speckling are dark olive-fuscous and very distinct. The palpi, shoulders, and patagia are all varied with red scales ; the red face has a dark line down the middle.

2 ♂♂ taken along with the type form.

SUBFAMILY HETERUSIINAE.

Anemplocia gen. nov.

Forewing: elongate triangular; costa nearly straight: apex blunt; hindmargin obliquely curved, long; anal angle rounded off.

Hindwing: long and narrow; inner margin short; apex rounded.

Antennae thick, rough-scaled, subserrate, pubescent; palpi porrect, reaching a little in front of face; tongue well developed; frenulum absent.

Neuration: forewing, cell shorter than half of wing; discocellular vertical in upper third, then oblique, the lower three times as long as the upper arm; first median nervule at about two-thirds, second shortly before third; lower radial from angle of discocellular; 6, 11, 7, 10, 8, 9 all stalked, 11 anastomosing shortly with 12: hindwing, costal and subcostal anastomosing to near upper end of cell; 6, 7 stalked; discocellular biangulate, the radial from the lower angle.

Type: *Anemplocia flammifera* spec. nov.

Emplocia primulina Butler & Druce, *E. cubagidaria* Feld., and *E. potentia* Druce, all probably belong here.

87. **Anemplocia flammifera** spec. nov.

Forewing: deep yellow, with the costa broadly, the apex and hindmargin very broadly black; fringe black.

Hindwing: the same, but the black border of hindmargin is not wider than that of the costa, which for two-thirds from base is yellow; the triangular patch of yellow ground-colour nearly reaches hindmargin below apex.

Underside like upper.

Head, antennae, thorax, and abdomen all black; abdomen at sides with obscure pale patches; legs and abdomen beneath black.

Expanse of wings: 40 mm.

1 ♂ from Colombia.

88. **Erateina albiradiata** spec. nov.

Forewing: brown-black, with two postmedian contiguous hyaline white spots, as in *E. subjunctaria* Wlk. (= *fluminata* Snell. = *media* Druce), and in addition two white streaks from the base, one above median vein filling nearly the basal half of cell, the other along inner margin beneath the submedian vein almost reaching anal angle; some little way before the apex below the subcostal vein is a small white outwardly curved mark; fringe worn.

Hindwing: with the white central area much as in *subjunctaria*, limited by a narrow black border on abdominal margin.

Underside of forewing blue-black, dusted with whitish in basal half and as far as anal angle along inner margin; apical region grey-brown; all the white spaces larger; the upper median spot and that before apex both extended to costal margin: hindwing with a deep blue-black blotch along basal half of costa, sprinkled with pale blue scales; a similar submarginal blotch, but browner, above anal angle; a grey-brown marginal border from before apex to anal angle, the inner edge of which is traversed by a wavy white line starting broadly from costa.

Head, thorax, and abdomen fuscous; cheeks and apparently the patagia and segmental rings of abdomen white; abdomen beneath and pectus blue-black.

Expanse of wings: 30 mm.

1 ♂ from Yungas de la Paz, Bolivia, September 1899 (Garlepp).

89. *Erateina hyaloplaga* spec. nov.

Forewing: velvety brown-black, the fringe concolorous; a large hyaline white loaf-shaped blotch between veins 2 and 4, crossed by vein 3, the lower part the larger; from its inner side a dark band can be detected to costa before middle; a broad bluish white space along inner margin from near base to before anal angle.

Hindwing: dull olive-fuscous, with an indistinct grey submarginal band curved like hindmargin, the veins slightly paler, with wedge-shaped patches of dark between them; fringe chequered light and dark grey; a dark ridge across middle of wing above edge of lobe.

Underside of forewing dull vinous red; inner margin broadly shining white; the white hyaline spot surrounded with blackish, and connected with costa by a curved white band; apical and hindmarginal areas dull grey-brown; veins from base narrowly white; hindwing red, with a submarginal white band, and the veins radiating broadly white, with wedge-shaped red spaces between them; marginal line black; fringe white, broadly chequered with black beyond veins; lobe of inner margin white, with a narrow red submarginal and broad black and red central line.

Palpi black above, white below; face black with white cheeks; shoulders and patagia black, tipped with white; thorax with a white central line; abdomen fuscous, with narrow white segmental rings, broader beneath; the legs bluish white.

Expanse of wings: 36 mm.

1 ♂ from Cuzco, Peru, April 1901 (Garlepp).

Forewing very broad, with sinuous costa; hindwing narrow, with rounded hindmargin.

90. *Heterusia coecata* spec. nov.

Like *H. flavocellata* Warr., but, instead of the semicircular patch above inner margin, the basal half of the wing is dull black, with the veins pale; the yellow spot before apex larger. In the hindwing the black border narrows off to a point at middle of costa.

Underside of forewing with the cell white and the space below it whitish to inner margin; the yellow spot still larger.

Expanse of wings: 26 mm.

1 ♂ from Cuzco, Peru, April 1901 (Garlepp).

SUBFAMILY OURAPTERYGINAE.

91. *Phrygonis cruorata* spec. nov.

Forewing: dark dove-grey; crossed by the usual two outwardly oblique bands; of these the basal is dull yellow and waved, edged by metallic silvery drops, on the inner side from costa to inner margin, on the outer from costa to just below subcostal vein only; the outer band from before middle of costa

to three-fourths of inner margin is a mixture of yellowish and blackish scales, edged outwardly by a darker line and then a bluish white line ; its inner edge is lined throughout with metallic silvery, its outer only to subcostal vein ; this vein is yellowish between the two lines : fringe whitish yellow, grey only at extreme apex ; at the base of wing are a few yellow and metallic scales.

Hindwing : with the outer line of forewing continued across it to anal angle, being roundly curved below the middle ; the outer pale line here becomes lustrous in its lower course : the space between the inner metallic line and the outer lustrous one is traversed by a central black line, the space before it being clear pale yellow, and that beyond it mixed, as in forewing, with blackish ; two metallic silvery spots before the angle, the lower and smaller one edged inwardly with black, the larger upper one with deep red ; a broad patch of the same red runs along margin from apex to vein 6, and thence narrowly round the tail ; fringe whitish yellow from apex to angle, grey below the angle.

Underside dark grey, with the outer pale line showing slightly in both wings.

Head, thorax, and abdomen grey like wings.

Expanse of wings : ♂, 44 mm. ; ♀, 40—44 mm.

1 ♂, 2 ♀ ♀, from Dominica, West Indies, November 1903 and January 1904 (Agar).

The hindmargin of hindwing is strongly angled at middle, especially in the ♂.

SUBFAMILY PALYADINAE.

92. *Argyrotome muricolor* spec. nov.

Forewing : mouse-grey, the scales forming fine dark transverse lines on a paler ground ; basal two-thirds spangled with coarse dull leaden scales ; a large round ocellus on discocellular, the pupil black, almost hidden by a central boss of raised leaden scales, surrounded by first a dull olive-yellow and that with a dark ring ; a broad curved olive-brown shade from two-thirds of costa to anal angle, traversed along middle by a line of contiguous leaden bossy spots between the veins ; fringe concolorous.

Hindwing : without discal ocellus, the basal two-thirds sprinkled with coarse metallic scales ; a leaden metallic line from before apex to anal angle, and another along hindmargin ; the marginal space tinged with olive-brown and marked by three bosses of leaden scales, one on each side of vein 3, the upper the larger, and a small one between 6 and 7 ; fringe grey.

Underside pale blue-grey, with a broad brownish submarginal fascia on both wings.

Face and palpi dark, the face with a strong steely lustre ; thorax and abdomen grey.

Expanse of wings : 26 mm.

1 ♂ from Chanchamayo, Peru, October 1901 (Garlepp).

93. *Berberodes penumbra* spec. nov.

Forewing : white with three lines of gilded yellow spots, as in *conchylata* Guen. ; the costa yellow, speckled with purplish bronzy at base, and with three brown spots at beginning of the lines ; a brown marginal border from below apex to anal angle, interrupted by the white ground-colour between veins 3 and 4 ; a row of dark brown diamond-shaped marginal spots between the

veins, preceded in the brown marginal shade by white dashes; marginal line finely white; fringe grey-brown.

Hindwing: with the dark marginal spots, but no brown shade; some yellow striae in the submarginal area; fringe white.

Underside pure white, with a dark fuscous marginal border, starting broadly at costa, and narrowing to a point at anal angle, interrupted between 3 and 4 by a white sinus; fringe grey; hindwing with dark marginal spots, forming a slight blotch at apex.

Head, palpi, antennae, and collar brown; thorax and abdomen white; legs white; forelegs brown in front.

Expanse of wings: 30 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., January 1903, rainy season (Ockenden).

Distinguished by the different marginal border.

94. *Ophthalmophora hybridata* spec. nov.

Forewing: pale brownish grey, crossed by two pale yellow bands as in *Phrygionis*, but without any metallic edging, the first narrow, with the outer half ochreous, the second broad with the inner half ochreous; a narrow yellow marginal streak from vein 4 to 1; the fringe pale below middle, grey above.

Hindwing: with an ochreous slightly curved streak from three-fifths of costa towards anal angle, the area beyond it and round anal angle fulvous orange, the extreme margin yellower, edged with orange, and with a dark spot in the projection at vein 4; from the anal angle a metallic line starts, edging the yellow marginal area on the inside, curving round beneath costa and descending to join its own course above vein 3; the centre of the oval space thus formed is greyish, and contains a round embossed metallic spot on a black ground ringed with yellow; a spot of black and metallic scales stands on the metallic line above vein 4; fringe fulvous.

Underside of forewing grey, quite pale at base, blackish towards hindmargin, with a pale cream-coloured band from beyond middle of costa, broadening to inner margin; hindwing cream-coloured in basal half, fulvous beyond, with a curved black streak from below apex to middle.

Head, thorax, and abdomen above and below pale grey.

Expanse of wings: 38 mm.

1 ♂ from Yungas de la Paz, Bolivia, 10000 m., December 1899 (Garlepp).

The superficial resemblance which this insect bears to *Phrygionis* in the forewings is remarkable; and, as in most species of that genus, the hindwing is bluntly elbowed at middle.

95. *Opisthoxia fulvata* spec. nov.

Forewing: creamy grey towards base, pale fulvous in outer half: the markings as in *nitidisquama* Warr., but much paler; the costa and basal half of wing sprinkled with silver scales, the outer half with black scales; the outer and submarginal bands as in *nitidisquama*, but very obscure, only pale lustrous; the two embossed spots at apex alone conspicuous; fringe buff.

Hindwing: nearly wholly fulvous except at extreme base; the outer band only pale lustrous; fringe whitish.

Underside uniform pale creamy grey, tinged with fulvons towards margin.
 Vertex, thorax, and abdomen pale creamy grey; face and palpi pale fulvons.
 Expanse of wings: 26 mm.
 1 ♀ from Ciudad Bolívar, Venezuela, July 1898 (S. Klages).
 Distinguished from *nitidisquama* Warr. by the different ground-colour.

96. *Opisthoxia scintillans* spec. nov.

Forewing: pale greyish cream-colour, with a faint brown tinge in places, and beyond the middle thickly sprinkled with olive scales; costa marked with some coarse metallic scales towards base, the edge pale brown; a pale brown diffuse shade from inner margin just beyond middle, vertical in direction, but not reaching costa, accompanied by some coarse brilliant metallic scales; a submarginal brownish shade from apex to anal angle, accompanied by similar bright metallic scales in a sinuous series, forming slight blotches between the veins; fringe very pale brownish.

Hindwing: rather browner, especially towards hindmargin; the inner-marginal half with coarse metallic scales; a submarginal sinuous metallic line, as in forewings; close to the margin between veins 4 and 6 an oval black spot ringed with yellow, the entire lower half of which is overlaid with a boss of brilliant metallic scales, the whole placed in a round space of brownish yellow; fringe whitish; inner margin and costal area whitish.

Underside dull yellowish cream-colour, with a smoky greyish marginal cloud on each wing.

Face and palpi pale brownish; vertex, thorax, and abdomen like wings.

Expanse of wings: 35 mm.

1 ♂ from Chanchamayo, Peru, October 1901 (Garlepp).

The forewings are rather rubbed towards base, but they appear to have been sprinkled with shining scales, like the inner area of hindwing.

The species differs, alike in coloration and character of markings, from others of the genus.

SUBFAMILY DEILINIINAE.

97. *Lomographa inaequata* spec. nov.

Like *Lomographa chartularia* Dogn. (*Syllexis*), but whereas in that species the lines of the forewing are straight and at equal distances from one another, starting from costal spots at about one-fourth, one-half, and three-fourths respectively, in *inaequata* the first line starts from one-third of costa and runs to middle of inner margin straight; the second from nearly two-thirds of costa to three-fourths of inner margin sinuous; the third from five-sixths of costa nearly straight to anal angle; in the hindwing the two lines are curved much as in *chartularia*, but the hindmargin and especially the anal angle are tinged with fulvons.

Expanse of wings: 34 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., November 1901, wet season (Ockenden).

98. *Lomographa venata* spec. nov.

Forewing: silky white, without speckling; costal edge, veins, and marginal line finely bronzy brown; three distinct grey transverse lines, none reaching costa: the first along the discocellular, then vertical; the second close to it and parallel below middle, above middle slightly curved from the subcostal; outer parallel to the second but nearer hindmargin; fringe concolorous; no cell-spot.

Hindwing: with the two outer lines only, both indistinct; otherwise like forewing.

Underside uniform white; costa of forewing bronzy brown.

Head, shoulders, and palpi white mixed with dull yellow; thorax and abdomen white; legs white, externally fuscous-tinged.

Expanse of wings: 32 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., June 1901, dry season (Ockenden).

SUBFAMILY BRACCINAE.

99. *Melanchroia albifascia* spec. nov.

Forewing: black, with a broad white band crossing the wing obliquely from costa just beyond middle nearly to anal angle; fringe black.

Hindwing: purple-black.

Underside the same as upper.

Head, thorax, abdomen, and legs black; pectus fulvous.

Expanse of wings: 34 mm.

1 ♀ from Cananche, Cundinamarca, July 1903 (de Mathan).

100. *Melanchroia astigma* spec. nov.

Forewing: deep black, with an oblique subquadrate blotch with rounded edges beyond cell pure white; fringe black with the extreme apical tips white.

Hindwing: wholly black, the fringe as well.

Underside like upper.

Palpi, pectus, and anal tufts fulvous; all the rest black.

Expanse of wings: 35 mm.

1 ♂ from Cuzco, Peru, March 1901 (Garlepp).

Differs from *M. ateraea* Cram. and its ab. *subnotata* Warr. in having no trace of a white cell-mark on hindwing either above or below; the fringe of hindwing is wholly black; and the veins of both wings are not even pale; the white blotch of forewing also seems to be differently shaped.

101. *Sangalopsis basidentata* spec. nov.

Forewing: velvety black, with a large orange-red patch in middle of wing; its upper edge starts from near base of cell and runs along the subcostal vein to a little beyond middle, where it forms a slight projection and turns at right angles straight or somewhat sinuous towards anal angle, before which it curves inwards, not quite touching inner margin to vein 1 at about middle; the inner edge shows two teeth, one just under the median vein, the other on the submedian fold; fringe reddish black.

Hindwing : dark velvety brown.

Underside similar, but the red more orange, the basal black area reduced in extent : hindwing paler brown, uniform in coloration.

Head, thorax, and abdomen black-brown : abdomen beneath and legs grey-brown.

Expanse of wings : 30 mm.

2 ♂♂ from Cuzco, Peru, April 1901 (Garlepp).

SUBFAMILY NEPHODIINAE.

102. *Leucula Meganira*, ab. *astigma* nov.

In the shape and position of the lines this form agrees well with the type of *Meganira* Druce ; but the discocellulars are unmarked in both wings, and there is no trace whatever of the round blackish spot that distinguishes the type.

Expanse of wings : 44 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

103. *Nipteria excavata* spec. nov.

Forewing : blurred grey, semihyaline, clouded with brownish grey in the upper marginal area ; costal area pale grey dappled with fuscous and black ; a small dark cell-spot, followed by an oblique line starting from a black costal mark, and below marked only by black dashes on veins ; a fine dark marginal line ; fringe dark fuscous, below middle marked with white between the veins.

Hindwing : wholly blurred grey, darker along hindmargin ; fringe mottled black and white.

Underside of forewing with the ground-colour whiter ; the markings as above ; hindwing grey, thickly mottled with darker, with small cell-spot and curved postmedian line marked only by black vein-dashes ; abdominal margin and fringe white.

Face and vertex dull white ; thorax and abdomen grey ; antennae, palpi, and legs dark fuscous.

Expanse of wings : 36 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., November 1902, wet season (Ockenden).

Hindmargin of forewing clearly肘ed at vein 4, thence to anal angle concave ; hindwing with hindmargin crenulate. Most nearly allied to *perimede* Druce and *pieria* Druce.

104. *Nipteria flavipectus* spec. nov.

Forewing : pale mouse-grey without speckling, the costal edge somewhat paler, more broadly towards apex ; three fine transverse lines slightly darker, starting from oblique fuscous streaks ; the first simply curved at one-third ; the second at three-fifths, roundly bent beyond the dark cell-spot ; the third at three-fourths, bent nearly at right angles at vein 6, then oblique to inner margin close beyond middle line ; faint traces of a dark submarginal shade ; fringe concolorous ; all the veins slightly darker.

Hindwing : with cell-spot, outer and submarginal curved lines, all very indistinct.

Underside paler, mottled with darker, especially in hindwing; veins all darker; outer line distinct in both wings; median and submarginal shades obscure.

Thorax, abdomen, legs, and antennae grey like the wings; head, shoulders, lateral base of patagia, a rim round the eyes, the pectus and coxae, all deep yellow.

Expanse of wings: 32 mm.

2 ♀♀ from Santo Domingo de los Colorados, West Ecuador, October 1898 (Goodfellow).

Wings shorter and broader, the build stouter than usual in the group.

105. *Nipteria infirma* spec. nov.

Forewing: dull pale grey, more densely scaled along costa and round apex and hindmargin; the apical area with some faint darker transverse striae; a slight dark cell-spot, and a scarcely perceptible waved outer line from three-fourths of costa parallel to hindmargin; fringe grey.

Hindwing: paler, with cell-spot, but no visible line.

Underside of forewing paler, with costa and outer margin pale brownish grey; cell-spot visible; outer line marked only towards costa; hindwing wholly brownish grey, with the curved outer line distinct.

Head, thorax, and abdomen grey, like the costal streak, the head parts with a slight luteous tinge.

Expanse of wings: 34 mm.

2 ♂♂ from Chanchamayo, Peru (Schunke).

A very insignificant-looking species, most resembling *subcomosa* Warr.

106. *Nipteria pieridaria* spec. nov.

Forewing: white, the veins towards hindmargin dark; costal area above subcostal vein and an oblong subquadrate apical blotch reaching to vein 4 brownish grey; a dark grey vertical cell-mark; a thick dark grey marginal line; fringe worn, probably pale.

Hindwing: with veins and marginal line as in forewing; cell-spot obscure.

Underside with all the veins brownish; forewing with costal edge, cell-spot, a quadrate patch on margin between veins 4 and 6, and the commencement on costa of a submarginal line brownish; hindwing with costal blotch near base, cell-spot, a submarginal curved line forming blotches on costa and towards inner margin, and a slight blotch at hindmargin between 4 and 6 brownish; marginal line dark grey.

Head, thorax, and abdomen dull whitish; terminal segment of palpi blackish; legs fuscous.

Expanse of wings: 45 mm.

1 ♀ from La Palma, Cundinamarca, Colombia, August 1903 (de Mathan).

In both wings the hindmargin is visibly indented beyond cell.

107. *Nipteria subsordida* spec. nov.

Forewing: dull whitish, semihyaline; the marginal area broadly dull grey; its edge starts from middle of costa, running sinuously outwards along discocellular to inner margin before anal angle; in the dark area are traces of two pale bands showing through from beneath; costa from base to near middle grey, then blurred whitish; fringe dull whitish; the veins across the paler ground-colour grey.

Hindwing: dirty whitish, becoming diffusely grey along hindmargin; fringe grey.

Underside dull grey, with three pale bands from costa, one just before middle widening below median vein, corresponding to the outer half of the pale area above, a second from two-thirds running towards anal angle, and a third along hindmargin; hindwing with a curved pale postmedian band following a dark grey band; the lower half of cell and area between veins 2 and 3 at base also paler.

Head, thorax, and abdomen pale smoky grey, shoulders and patagia somewhat darker; antennae dark grey.

Expanse of wings : 34 mm.

1 ♂ from Castro, Parana (E. D. Jones).

This seems to be the Brazilian form of the species from Peru which I have called *trisepta*.

108. **Penthophlebia fuscicosta** spec. nov.

Forewing : pure white, the costa smoky grey from base to apex.

Hindwing : white.

Underside like upper.

Abdomen white; face, shoulders, and patagia pale yellow; antennae fuscous.

Expanse of wings : 45 mm.

2 ♂♂ from Cananche, Cundiuamarca, Colombia, August 1903 (de Mathan).

109. **Penthophlebia posticaria** spec. nov.

Forewing : silky white, the costal edge grey throughout; fringe white, with the extreme tips grey; veins all white except the submedian, which is linearly black, and sometimes the basal half of subcostal.

Hindwing : white; the submedian vein black as in forewing.

Underside white throughout, except costal edge of forewing.

Thorax and abdomen white; head, palpi, and shoulders pale yellowish; legs white, externally fuscous.

Expanse of wings : 42 mm.

2 ♂♂ from Sara Province, Department Santa Cruz de la Sierra, February—June 1904 (Steinbach).

110. **Penthophlebia subapicata** spec. nov.

Forewing : white, with a faint grey flush; the veins dark grey; costal edge and fringe dark grey throughout; costal and apical areas pale grey.

Hindwing : with the veins and fringe grey.

Underside of forewing with a grey shade across apex to vein 4; the costal edge and veins towards margins of both wings dark; fringes dark grey.

Head, thorax, and abdomen white, the head and shoulders faintly yellowish; antennae black, the shaft as well as the pectinations; legs with the tarsi and tibiae blackish.

Expanse of wings : 38 mm.

1 ♂ from Chanchamayo, Peru (Schunke).

The hindmargin of both wings is faintly elbowed at vein 4.

111. **Perigramma repetita** spec. nov.

Forewing : white; costa and hindmargin greyish slate-colour; the costal streak linear at base and gradually swelling, the hindmarginal border broader at

apex and gradually thinning downwards to anal angle ; inner margin below submedian vein faintly greyish ; a pale grey straight band from middle of costa to inner margin before anal angle ; fringe grey, white-tipped at midwing.

Hindwing : with a curved smoky grey band from costa touching apex to anal angle touching hindmargin ; a grey slightly curved band from middle of costa to inner margin before anal angle ; the inner margin slightly grey-tinged ; fringe white, grey at apex and anal angle.

Underside of forewing with the grey costal stripe narrower and paler ; the hindmargin with a whitish smudge at apex and middle, and the fringe whitish ; hindwing with a narrow curved submarginal line from apex to anal angle ; fringe white.

Face, vertex, antennae, and palpi above black ; thorax and abdomen white ; collar yellow ; shoulders yellowish in front ; palpi beneath and pectus yellow ; legs white ; the forelegs blackish in front.

Expanse of wings : 48 mm.

1 ♂ from Carreblanco, Costa Rica (Lankester).

SUBFAMILY ASCOTINAE.

112. *Bryoptera discata* ab. *cretata* nov.

The present example of *discata* Guev. is so differently coloured from ordinary forms that it seems to deserve a name.

The ground-colour throughout is chalk-white, varied with a few olive-ochreous striae along costa of forewing and some slight suffusion of the same colour on hindwing. The lines, such parts of them as are visible, agree entirely : in the hindwing the two lines are marked near inner margin with deep black spots, on olive-ochreous bands.

Underside white, with faint ochreous suffusion, and a slight greyish submarginal cloud on forewing.

Head, thorax, and abdomen all white.

Expanse of wings ; 30 mm.

1 ♂ from R. Colorado, Peru, October 1902 (Watkins).

113. *Bryoptera distincta* spec. nov.

Forewing : whitish, almost wholly diffused with grey-green, and speckled with dark ; lines black, distinct ; first at one-fourth, fairly vertical, but angled inwards on subcostal vein and again outwards just below it, preceded by a less distinct dark line and a rufous shade ; median line equally distinct and black, oblique outwards at first, angled on veins 6 and 4, and passing close outside of the black cell-spot, then incurved ; outer line at two-thirds, vertical to vein 6, incurved to 4, and followed by three dull dark spots and a rufous shade, then incurved to inner margin at two-thirds, parallel to median line ; all three lines thickened on costa and blacker on the veins ; submarginal line waved, indistinct, followed by a darker grey shade ; marginal spots black ; fringe grey, mottled with darker.

Hindwing : paler in basal half, with a thick diffuse black line from middle of inner margin to before the black cell-spot ; outer line as in forewing, followed

by a pale line and then a dark shade : marginal area darker ; markings as in forewing.

Underside whitish, speckled with blackish, and in forewing tinged with grey ; dark cell-spots and outer lines and a faint submarginal cloud.

Head, thorax, and abdomen pale grey ; palpi blackish.

Expanse of wings : 28 mm.

1 ♂ from Castro, Parana, August 1902 (E. D. Jones).

114. *Cymatophora limbata* spec. nov.

Forewing : greyish ochreous, thickly speckled with olive and fuscous, and suffused with darker beyond outer line ; the lines fine and obscure ; first from one-fifth of costa to one-fifth of inner margin, angled in cell ; outer from three-fourths of costa nearly straight to three-fifths of inner margin ; a very faint median shade ; cell-spot black ; submarginal line indicated only by two pairs of blackish spots preceding and following it, above and below vein 5 ; slight black marginal spots ; fringe concolorous.

Hindwing : in the basal two-thirds paler grey ; a distinct straight antemedian line before the black cell-spot ; the outer line thick and double, being followed by an outwardly diffuse olive shade.

Underside paler, whiter grey, the forewing with a greenish tinge, and much speckled ; an ill-defined dark submarginal band ; black cell-spots and marginal spots.

Head, thorax, and abdomen like wings ; shoulders dark olive, speckled with fuscous.

Expanse of wings : 38 mm.

1 ♂ from Sapucay, near Villa Rica, Paraguay, September 1903 (Foster).

The outer line straight in both wings ; in *C. modesta* Warr., from the same locality, the outer line, especially of forewing, is dentate-lunulate.

115. *Cymatophora muscitincta* spec. nov.

Forewing : dull grey, with a greenish tinge, and thickly speckled with moss-green and fuscous atoms ; the lines moss-green ; first from one-fifth of costa to one-fifth of inner margin, bent in cell ; median line, much before the middle, from before two-fifths of costa to two-fifths of inner margin, nearly straight, faintly incurved above and below median ; outer line at three-fifths, also straight, but dentate-lunulate, the lunules shallow and the teeth short, followed by a thick moss-green shade dentate outwardly on the veins and becoming obsolete towards costa ; submarginal line indicated by a row of black spots occupying the usual lunules, plainest above middle, followed above middle by a dark triangular shade, the marginal area generally darker ; fringe concolorous ; no distinct marginal line or spots ; cell-spot black, distinct.

Hindwing : without first line ; antemedian and postmedian as in forewing, but the latter almost hidden in a broad dark moss-green shade following ; cell-spot round and black ; the rest as in forewing.

Underside greenish cinereous, speckled and suffused with darker ; the lines barely indicated ; a diffuse dark submarginal fascia, strongest at costa of forewing.

Head, thorax, and abdomen grey, the head and shoulders greenish tinged.

Expanse of wings : 44 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., May 1902, dry season (Ockenden).

The antennae are shortly pectinate. The species is certainly related to *limosa* Dogn., but the lines are different, and the green tinge is very noticeable.

116. *Iridopsis griseescens* spec. nov.

Forewing: dull grey, thickly sprinkled with dark grey scales; the lines blackish, all thickened and black on costa; the veins marked with black dashes at the crossing of the dark shades; basal line double, the arms starting at one-sixth and one-third of costa, curved obliquely inwards and converging; a diffuse cloudy blackish cell-mark, touching median line, which is incurved; outer line from two-thirds of costa, vertical to vein 6, then oblique inwards, sharply marked by black wedge-shaped spots on veins, to middle of inner margin, the four lines at equal distances apart on inner margin; submarginal line lunulate-dentate, the marginal area beyond it darker grey, preceded at costa by a double dark shade, which becomes black beyond cell and cloudy below; a black marginal festoon, with spots between the veins; fringe dark and light grey.

Hindwing: with a median line marked by black vein-spots just beyond the black cell-spot, preceded by two dark shades on inner margin and followed by two grey waved cloudy shades before the whitish submarginal line; the rest as in forewing.

Underside dull bone-colour, smudged with grey on forewing and towards costa of hindwing; the cell-spots and marginal spots black.

Head, thorax, and abdomen all dull grey.

Expanse of wings: 38 mm.

1 ♂ from Quito, Ecuador (W. Goodfellow).

117. *Iridopsis subnigrata* spec. nov.

Forewing: white, thickly speckled with grey or blackish, especially in the ♀; costa with black spots and short striae; the lines all marked by black spots on veins; first obliquely curved inwards, from one-fourth of costa to one-fifth of inner margin, double, the space between tinged with brown scales; cell-spot large, the centre consisting of pearl-grey, somewhat raised, scales in a blackish ring; the median shade, starting from a black spot above it and curved round it, marked by brown spots on veins, and obscurely double; outer line at about two-thirds, vertical to above vein 5, there angled and oblique and straight to vein 1, then again vertical, marked by black vein-spots and followed by a chestnut-brown shade, which is thickest and darkest near costa; submarginal line whitish, obscure below vein 4, where it is more or less lost in the ground-colour, plainest above, the two lunules beyond cell preceded by a conspicuous black blotch and followed by a deep brown-black shade, the apex remaining whitish grey; marginal area with the veins broadly rufous; marginal spots large and black; fringe mottled rufous and white.

Hindwing: with costa and base white; a double black antemedian line; cell-mark as in forewing, but smaller; the rest as in forewing.

Underside whitish, slightly grey-tinged; forewing with large smoky blackish cell-spot and broad blackish marginal border, leaving the apex white; hindwing with smaller cell-spot and partial blackish border; in the ♀ both spots and border are larger and blacker, the latter complete in both wings.

Head, thorax, and abdomen white; face and palpi varied with grey and pale

brown; tips of the shoulders brown: thorax, patagia, and abdomen black-speckled; the last with paired dorsal spots.

Expanse of wings: ♂, 44 mm.; ♀, 48 mm.

1 ♂, 1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December, wet season; and 1 ♂ October, dry season, 1902 (Ockenden) type: 2 ♂♂ from Cuzco, Peru, October 1900 and April 1901 (Garlepp); 1 ♂ from Chanchamayo, Peru (Schunke).

118. *Pherotesia alterata* spec. nov.

In appearance like *Ph. malinaria* Schaus, but paler; all the lines farther from hindmargin. The hindwing is not dark, but pale ochreous, with olive dusting and three distinct lines: an obscure median, a double postmedian, and a thick macular submarginal, only the last reaching costa, which basewards is quite pale.

Expanse of wings: 48 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, July 1903 (de Mathan).

Distinguished at once from *malinaria* by the veins 4 and 5 of hindwing being stalked together; but the swelling is present on vein 2, as in that species.

In *Ph. subjecta*, described below, veins 4 and 5 are separate and the swelling on vein 2 absent; in *Ph. condensaria* Guen. veins 4 and 5 are stalked, but there is no swelling on vein 2.

119. *Pherotesia flavicincta* spec. nov.

Forewing: olive-ochreous; the veins olive-yellow; the markings dark olive-fuscescent; these are much broken up, and the whole wing is densely sprinkled with dark dots and striae: costa with coarse spots and blotches of fuscescent; lines pale, lunular, preceded and followed by blotches of olive-fuscescent; the inner vertical at one-third, the outer at two-thirds; close to the base there appears to be a similar short basal line; the submarginal line is preceded by a series of larger blackish blotches, and followed by a series of dark anvil-shaped marginal marks between the veins; all these lines are broken up by the yellow veins; cell-spot large and dark; fringe yellow, mottled with fuscescent.

Hindwing: dull yellowish ochreous, blurred with olive-grey speckling; a dull cell-spot; dark postmedian and submarginal lines, most distinct on inner margin; dark marginal lunules before the yellow fringe.

Underside more or less clouded with olive-cinereous; some yellow striae along costa of forewing; a blotch beyond cell, and interrupted traces of submarginal and subterminal lines; a square apical spot and the fringe yellow; hindwing yellow, striated with cinereous; a large dark cell-spot; fringe yellow.

Head, thorax, and abdomen olive-yellow, mottled with fuscescent; legs and antennae the same.

Expanse of wings: 52 mm.

2 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6—10,000 ft. (Böttger).

In appearance exactly like species of the genus *Pherotesia* Schaus, but with entirely normal neurulation.

120. *Pherotesia potens* spec. nov.

Forewing: pale ochreous, thickly freckled with olive-fuscescent; the lines distinct, blackish, and mostly double; along the costa and beyond the median line a faint olive tinge is visible; towards the hindmargin the freckling is denser

along the veins : inner line vertical, from one-fourth of costa to one-third of inner margin, forming a bilobed projection outwards above and below the median, preceded at some distance by a broader but more diffuse line similarly projecting ; median line vertical, from a little before middle of costa to middle of inner margin, lunulate-dentate, single, followed shortly by a distinct black discocellular lunule ; outer line strongly lunulate-dentate, from two thirds of costa to two-thirds of inner margin, sinuate, outcurved above and incurved below the middle, followed by a more diffuse dark shade, the interval between them pale throughout ; submarginal line double, both arms lunulate-dentate, the inner with the teeth directed outwards, the outer inwards ; a row of black marginal lunules ; fringe greyish ochreous, paler beyond veins.

Hindwing : paler, yellowish ochreous, slightly speckled, except beyond submarginal line ; antemedian and postmedian slightly waved dark grey lines from inner margin to vein 6 ; a submarginal line of black contiguous blotches between the veins, followed by a dark shade ; marginal lunules as in forewing ; fringe wholly pale.

Underside pale ochreous, slightly speckled, more densely in forewing ; the lines obscure ; both wings with a broad diffuse dark submarginal fascia.

Head, thorax, and abdomen ochreous, densely speckled with olive-fuscous ; legs mottled with blackish ; abdominal tufts blackish.

Expanse of wings : 56 mm.

Several ♂♂ from Yungas de la Paz, Bolivia, September 1899 (Garlepp).

Larger and paler, with more distinctly expressed markings than *Ph. condensaria* Guen., with which it agrees in having veins 4 and 5 of hindwing shortly stalked, and no swelling on vein 2 ; the basal segments of abdomen laterally are armed with a pair of dark hair tufts.

121. *Pherotesia subjecta* spec. nov.

Forewing : ochreous, thickly suffused with olive-green and dusted with fuscous ; the lines and markings indistinct, all more or less like those of *Ph. malinaria* Schaus and *alterata* Warr. ; a dark line close to base ; a double basal line, outcurved above and below median vein ; a large diffuse olive cloud at middle of costa, on the outside of which is placed the black cell-spot ; the median line rises before the middle and apparently approaches the basal line on inner margin ; outer line double, lunulate-dentate, from three-fourths of costa to middle of inner margin, followed above median by dark olive clouds ; submarginal line whitish, preceded and followed by dark blotches between the veins, that above vein 1 conspicuous ; a pale streak from apex ; dark marginal lunules : fringe greyish olive.

Hindwing : pale greyish olive, blurred, the marginal third darker ; cell-spot round, cloudy.

Underside dirty grey, speckled with darker and tinged with greenish ; all the markings present, but obscure.

Head and thorax olive-grey ; abdomen paler grey.

Expanse of wings : 44 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., November 1902, wet season (Ockenden).

Agrees with *Ph. malinaria* Schaus in neurulation, vein 5 present in hindwing and rising above 4, but vein 2 without any swelling.

122. *Stenalcidia* (?) *divisata* spec. nov.

Forewing: whitish striated with grey; marginal area beyond outer line grey with a reddish tinge; first line double, dark fuscous, the two arms farther from one another on costa, both angled on subcostal vein, then oblique inwards to near base of inner margin, the inner arm reddish tinged; outer line black, from two-thirds of costa to three-fifths of inner margin, obliquely waved outwards to vein 6, forming a blunt projection beyond cell, then sinuous inwards, the ground-colour within the projection white without grey striae; median line cloudy, waved, bent outwards beyond the cell-spot and approaching outer line towards inner margin; cell-mark annular and large; the outer line is followed closely by a rufous-grey line; submarginal line acutely dentate, pale, the teeth filled in with darker and beyond cell with black scales, and there also followed by black scales to margin; a row of round black marginal spots; fringe reddish grey; on the costa between outer and submarginal line a darker cloud.

Hindwing: with a black streak at base; median line more concise than in forewing, and preceding the annular cell-mark; outer line black, forming only a slight angle beyond cell; the rest as in forewing.

Underside dirty whitish clouded with smoky grey; both wings with large black cell-spots and broad black borders, marginal in forewing, submarginal in hindwing; apex of forewing pale; traces of a dark median line.

Head, thorax, and abdomen greyish white, the thorax greyer; abdomen with a dark basal ring and the segmental rings rufous; face dark grey above, pale below.

Expanse of wings: 44 mm.

1 ♀ from Sta. Lucia (Branch).

The species seems related to *S. pluviana* Wlk., but its position must remain doubtful in the absence of the ♂.

SUBFAMILY SELIDOSEMINAE.

GENUS *Bagodares* Druce.

This genus, described in the *Biologia*, vol. ii. p. 175, was placed by the author among the *Larentiadae*; but the type-species *prosa* has no radial in the hindwing, and is rather to be placed in the *Selidoseminae*. A second species is now added to the genus.

123. *Bagodares pallidicosta* spec. nov.

Forewing: pale purplish grey, with purplish brown suffusion in parts; a white and cream-coloured costal blotch extending from one-fourth of costa, where it is pointed, to close before apex, where it touches vein 6, with grey striae along costal edge; below this blotch runs a dark shade of brown; lines fine, brown: first from one-fourth of costa, acutely angled on subcostal vein, then oblique to one-fifth of inner margin; second line from a brown streak at three-fifths of costa, marked with a black spot above and below vein 7 in the pale blotch, then oblique parallel to first line to before middle of inner margin; outer line from a brown streak before the end of pale blotch, running slightly divergent from second to two-thirds of inner margin, closely followed by a black line starting vertically from the end of the blotch, edging the brown shade beneath it, and becoming diffuse

towards inner margin; a dark brown marginal line; fringe dark grey with a pale base.

Hindwing : with the base pale grey, limited by a straight line, continuing the second of forewing; the two outer lines continued as postmedian lines, outcurved beyond cell and diverging from each other, the space between inner and outermost suffused with olive-brown, containing a rather large oval pale yellowish cell-spot.

Underside pale grey, freckled with darker, with a submarginal fuscous cloud, distinct on forewing only.

Thorax and abdomen pale grey varied with darker; shoulders, collar, face, and palpi olive-brown; vertex ochreous; antennae whitish.

Expanse of wings : 30 mm.

1 ♂ from R. Cayapas, N.W. Ecuador (Flemming & Miketta).

124. *Cidariophanes stellaris* spec. nov.

Forewing . dark brown speckled and dusted with yellow; the lines indicated only by larger whitish or luteous spots; first line curved, marked by a small pale costal spot, one on inner margin and an oval larger one on the submedian fold beyond it; a small white spot in cell and a dark one at the end; outer line marked by a short oblique white streak on costa at two-thirds, a thin spot touching end of cell, a large lunule in submedian interspace towards the oval spot of inner line; submarginal line marked by a small costal spot and four white spots in a line below it between the veins, a larger white horizontal spot below vein 4, and a narrow erect spot in submedian interval; this is preceded by a yellowish lunule and followed by yellowish scales; indistinct dark marginal spots; fringe brown-black, with pale luteous spots at ends of veins.

Hindwing : glossy whitish, thickly speckled along hindmargin with brownish and with traces of a dark lunulate-dentate submarginal line and some pale spots before margin; fringe rufous beyond a dark marginal festoon; cell-spot brown.

Underside of forewing blurred brownish dappled with whitish, of hindwing whitish densely speckled with brown, the pale spots of forewing showing through; cell-spots dark, and a dark lunulate-dentate submarginal line distinct on both wings.

Head, thorax, and abdomen like wings; face pale below; palpi dark brown; legs mottled.

Expanse of wings : 40 mm.

1 ♂ from Yungas de la Paz, Bolivia, December 1899 (Garlepp).

Unlike any other species with which I am acquainted, somewhat reminding one of *Melanoscia siderata* Dogn.

125. *Ischnopteris brunneoviridis* spec. nov.

Forewing : basal and marginal areas dull olive-green, central area dull red-brown; basal patch limited by an oblique dark line from one-sixth of costa to one-fourth of inner margin, forming a short tooth outwards above and below the median vein; outer edge of central fascia from three-fifths of costa to two-thirds of inner margin, bluntly angled on vein 4, then incurved, followed by a thick line of pale green mixed with darker scales; across the middle of the central fascia is a deeper red-brown shade angled in cell, then incurved and approaching the outer line on inner margin; between veins 3 and 4, in the ♀, the red-brown colour of the central fascia is projected to outer margin; through the upper and lower green

portions of the marginal area an interrupted pale submarginal line is traceable, beginning as a whitish spot on costa, forming two acute black pale-edged teeth below it, and a white lunule at inner margin; on costa and inner margin this line is preceded by a shade of deeper red-brown; a fine black marginal festoon; fringe dark brown, with fine pale chequering beyond veins.

Hindwing: greyish white, in one ♀ cinereous, with a broad blackish fuscous marginal border, preceded by a fine angled postmedian line; fringe reddish.

Underside of forewing blurred grey, blacker towards hindmargin; costal area pinkish ochreous, much speckled with black; a pale marginal patch between veins 3 and 4 and a smaller one at anal angle; hindwing ochreous, densely striated with blackish, the cell-spot, postmedian line, and marginal border black.

Head, thorax, and abdomen green, varied with darker and reddish ochreous; palpi pale with dark tips; abdomen darker along dorsum.

Expanse of wings: 35 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., December 1902; 1 ♀, November 1902, wet season; and 1 ♀, April 1902, dry season (Ockenden). The ♂ throughout is more strongly marked.

126. *Ischnopteris degener* spec. nov.

Forewing: greenish white, freckled all over with blackish striae, with a rufous tinge in parts; a dark blotch at extreme base; first line blackish, oblique, from one-sixth of costa to one-fourth of inner margin; outer line at about three-fifths, irregularly dentate, outcurved but interrupted in middle of wing to two-thirds of inner margin, followed by a pale greenish white band, broader on inner margin; median shade blackish and diffuse, sinuous; submarginal line whitish, interrupted, preceded by a blackish shade forming acute teeth below costa and above inner margin; the marginal area again becoming freckled and grey, with some ill-formed black marginal spots; fringe rufous-grey.

Hindwing: greyish white, darker along inner and hindmargin, with traces of a submarginal shade; fringe dark grey, beyond a dark marginal line.

Underside of forewing dirty whitish, with the markings all dull grey; of hindwing dull whitish with a few striae.

Head, thorax, and abdomen grey speckled with darker; palpi externally fuscous; face rubbed.

Expanse of wings: 26 mm.

1 ♂ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

Neodesmodes gen. nov.

Forewing: costa strongly arched at base, then straight; apex blunt; hindmargin curved, not oblique nor crenulate; anal angle squared.

Hindwing: ample; hindmargin with a very slight projection at vein 4, and indentation above it beyond cell; apical angle rounded; anal angle squared.

Thorax, metathorax, and abdomen tufted; palpi rough-scaled, upcurved in front; antennae (♀) simple; tongue and frenulum present.

Neuration: forewing, cell a little longer than half of wing; discocellular concave; first median nervule shortly before end of cell, second and third long-stalked; radials normal; 7, 8, 9 stalked from before end, 10 from the same point,

11 before it : hindwing, costal and subcostal slightly approximating near base ; 6, 7 stalked ; 3, 4, long-stalked.

Scaling smooth and fine, as in *Syrtoides* Guen.

Type : *Nodesmodes semialbata* spec. nov.

127. *Nodesmodes semialbata* spec. nov.

Forewing : silky white, with sienna brown and black markings ; a black basal patch, with its centre brown, followed at one-fourth by a broad curved or bent black band ; cell-spot black, with a black costal and subcostal mark above it, and some blackish scales forming a kind of median cloud across the white central area, which is bounded at two-thirds by an irregularly bent black line, forming a short beak outwards on median vein and another on submedian, strongly bulging basewards between ; marginal area brown, containing an interrupted white submarginal band, biangulate to vein 4, then interrupted and forming a straight line from 3 to anal angle ; before and beyond this lower arm the brown colour becomes black, and also beyond cell ; a pale streak at apex ; a row of dark marginal lunules ; fringe chequered white and brown.

Hindwing : white, with a broad blackish marginal border ; cell-spot and median line showing dark from underside ; fringe blackish.

Underside like upper, but all the markings of forewing dull, of hindwing clear.

Head, shoulders, and metathoracic tuft white ; palpi blackish, with white terminal segment ; thorax, patagia, and abdomen black, the last more cinereous, and with pale segmental rings ; underside of abdomen and legs mottled black and white.

Expanse of wings : 35 mm.

1 ♀ from Limbani, Carabaya, S.E. Peru, 9000 ft., February and March 1904 (Ockenden).

In the above description the coloration of the right wings has been followed. In the left forewing the costal end of the inner band, the cell-spot and those above it, and the marginal area above middle are brown, not black ; while in the left hindwing the marginal border is brown at apex. The same difference occurs on the underside.

128. *Sericosema angulata* spec. nov.

Forewing : pale ochreous, flushed with ochraceous, and with a few black speckles ; the veins, especially the median and its branches, paler than the rest ; first line represented by three black dots on veins and one on inner margin, placed in a slight curve at one-third ; outer line by a similar series from close before apex to five-sixths of inner margin, slightly sinuate ; followed by an ochraceous shade from apex, which pales off towards hindmargin ; a broad brownish ochraceous median shade from below two-thirds of costa to two-thirds of inner margin, nearly straight ; slight dark lines along margin between veins ; fringe ochraceous, with paler basal line.

Hindwing : without any ochraceous tinge, or first line ; the median shade browner.

Underside duller, tinged with greyish ochreous and more thickly speckled ; the markings indistinct.

Head, thorax, abdomen, and legs all ochreous.

Expanse of wings : 40 mm.

2 ♀♀ from Vancouver, British Columbia, May 1902 (A. H. Bush).

Distinguished not only by its much paler ground-colour, but also by the decided angulation of the forewing.

129. *Sericosema lignata* spec. nov.

Forewing : pale wood-brown ; the costa greyer, with fine black striae ; the lines dark grey, indistinct, marked by dark spots on veins ; the first from one-fourth of costa to one-third of inner margin, curved ; outer from two-thirds of costa to two-thirds of inner margin, oblique outwards, curved in cell, then straight ; sub-marginal line only plain at costa ; cell-spot black ; fringe concolorous.

Hindwing : paler, towards costa whitish ; a black cell-spot.

Underside greyish white, towards margins brownish, finely speckled throughout ; cell-spots black.

Head and thorax like forewings ; abdomen like hindwings ; legs speckled.

Expanse of wings : 50 mm.

1 ♀ from S.E. Albemarle, Galapagos Islands (R. H. Beck).

The apex of forewing is subfalcate, the hindmargin sinuate, the inner margin convex. The species may be referred temporarily to *Sericosema*.

SUBFAMILY FIDONIINAE.

Eupileta gen. nov.

Forewing : short and broad ; the costa arched, the inner margin convex, and heavily fringed with hair ; hindmargin slightly elbowed at vein 4.

Hindwing : with apex and hindmargin rounded, anal angle produced ; the whole wing above and below, except the apex, covered with layers and tufts of hair, especially thick and bristly at anal angle, the wing below appearing partially lobed.

Antennae of ♂ bipectinate, the pectinations far apart and ciliated ; palpi short, thick, hairy, porrect ; terminal segment drooping ; tongue and frenulum present ; hindtibiae swollen, with a pencil of grey hairs and four short spurs.

Neuration : forewing, cell not half as long as wing, broad ; discocellular vertical ; first median nervule at three-fourths ; second close before third ; radials normal ; 7, 8, 9 stalked ; 10 and 11 coincident, anastomosing with 12 : hindwing, costal and subcostal anastomosing to near end of cell ; 7 from before end, 6 from the inbent end of subcostal ; discocellular inangulate ; no radial ; medians as in forewing.

Type : *Eupileta hirsuta* spec. nov.

Allied to *Narragodes* and *Mimophyle* Warr., with which it agrees in the anastomosis of costal and subcostal of hindwing.

130. *Eupileta hirsuta* spec. nov.

Forewing : purplish brown, with fine striations ; the costa paler, dotted with blackish ; three brown lines, equidistant, and vertical in direction, all bent below costa and slightly insinuate beyond cell and on submedian fold : a black cell-spot before middle line ; a dark marginal line ; fringe brown.

Hindwing : in the ♀ with the two outer lines of forewing, in the ♂ without markings ; the tufts of hair at anal angle blackish, with their tips, like the fringe, ochreous.

Underside paler, without the inner line of forewing.

Head, thorax, and abdomen like wings ; anal tuft of ♂ bright yellow.

Expanse of wings : 18 mm.

2 ♂♂, 1 ♀, from Organ Mts., Tijuco.

SUBFAMILY SEMIOTHISINAE.

131. *Semiothisa flavida* spec. nov.

Forewing : dull yellow, slightly grey-speckled ; the marginal area grey-tinged ; costa dotted with black, and with black spots at the origin of the lines, which are of the same grey tinge as the marginal area ; first and second at one-fifth and two-fifths, outer line at two-thirds, all bent slightly below subcostal, then oblique more or less parallel to hindmargin ; outer line followed first by a broad grey line showing through from below, and then by a dentate shade ; the outer line marked on veins 3 and 4 by velvety black spots, followed by a brown blotch extending to the shade ; fringe yellow like wing, but black-brown along the excision, where the marginal line is of the same colour.

Hindwing : like forewing, but without basal line and dark blotches ; the outer line fine, dentate-lunulate, and curved ; the teeth finely marked with black.

Underside rather brighter ; the inner and outer lines indistinct, the line beyond outer dark brown and thick, followed by a fulvous shade ; slight grey cell-spots.

Head, thorax, abdomen, and legs all yellow ; forelegs fuscous in front.

Expanse of wings : 30 mm.

1 ♀ from Guadalupe, Cundinamarca, Colombia, August 1903 (de Mathan) (type), and 1 ♀ from Chanchamayo, Peru (Schunke).

Forewing with a shallow excision ; hindwing bluntly angled.

132. *Semiothisa nigrescens* spec. nov.

Forewing : smoky greyish ochreous, with fine dark transverse striae ; this paler ground, however, is visible only in the space between median and outer lines ; the rest of the wing is suffused with deep purplish fuscous ; the lines thick, blackish, starting from enlarged costal spots, all three vertical ; first from one-fifth of costa to one-fourth of inner margin ; second from before middle, touching or passing over the cell-spot ; outer line from two-thirds of costa to three-fourths of inner margin, dentate-lunulate ; an indistinct darker dentate submarginal shade ; slight traces of the paler ground-colour towards apex ; fringe purplish fuscous beyond a deeper line, and pale-tipped at anal angle ; costa with fine dark and lighter striae, and two or three pale spots before apex.

Hindwing : similar, without first line ; cell-spot within a curve of the median line ; submarginal line plainer and straighter ; fringe paler.

Underside pale ochreous, with brown striae ; median line thick, waved, brown ; marginal area purplish brown, leaving a pale space on both wings below vein 4, and with some small white spots before apex of forewing.

Thorax and abdomen like the dark parts of wings ; head paler, more olive ; abdomen below and legs ochreous, dark-speckled.

Expanse of wings : 35 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, August 1903 (de Mathan).

The excision of forewings and angle of hindwings both slight.

133. *Semiothisa quadricaudata* spec. nov.

Forewing : pale brownish ochreous, speckled with brown : costa at base, the apical area, and the lines brown ; basal and outer line very fine ; the basal curved outwards above and below the median vein, touching below the large fovea ; the outer line from three-fifths of costa to three-fifths of inner margin irregularly waved ; a broad diffuse median shade from near middle of costa to before middle of inner margin ; a straight brown shade from two-thirds of costa to just before anal angle ; a whitish apical streak above vein 7, speckled with ochreous grey ; a slightly hyaline pale spot above base of vein 6 ; marginal line dark brown ; fringe ochreous.

Hindwing : with the two thick shades at one-third and two-thirds, and the outer line fine and brown, dentate-lunulate.

Underside bright ochraceous speckled with brown ; with the two thick lines bright brown on each wing, and brown cell-spots ; the two white markings on forewing conspicuous.

Head, palpi, and forelegs dark brown ; shoulders and base of patagia grey-brown ; thorax and abdomen like wings.

Expanse of wings : 40 mm.

1 ♂ from Tuis, Costa Rica.

Distinguished from all the other similarly coloured species by the absence of an excision below apex of forewing, which is bluntly produced and falcate. Antennae shortly subserrate and pubescent.

134. *Semiothisa salsa* spec. nov.

Forewing : chalk-white, thickly and coarsely speckled with dark brown ; the veins towards hindmargin brown ; costa bright yellow between the brown spots ; lines all brighter brown than the speckling, waved, thickened on costa ; first from one-fifth of costa to one-fourth of inner margin, outcurved above and below median vein ; second from two-fifths of costa to middle of inner margin, incurved on each side of median, followed by a thick brown cell-spot ; outer line from two-thirds of costa to three-fourths of inner margin, thickly lunulate-dentate, incurved on submedian fold, followed on costa by a brown blotch reaching nearly to apex, from which an irregular brown fascia descends to anal angle, touching outer line at middle and externally dentate on the veins ; fringe brown like the lines.

Hindwing : similar, but whiter ; the first line basal ; the outer fascia starting from apex.

Underside like upper, but the ground-colour buff, except a white blotch running inwards from apex of forewing, and the inner margin of the same.

Palpi buff below, brown above ; face brown with the extreme base white ; vertex and antennae brown ; shoulders dark grey ; patagia and tips of shoulders pale grey ; abdomen white, blotched and speckled with brown, buff below and at sides ; legs buff mottled with brown.

Expanse of wings : 35 mm.

1 ♂ from Cananche, Cundinamarca, Colombia, August 1903 (de Mathan).

Excision of forewing shallow ; hindwing angled at middle.

135. *Semiothisa vulpina* spec. nov.

Forewing : ochreous speckled with dark brown scales ; the lines and markings pale fulvous ; first line from one-fifth of costa oblique outwards and angled in cell, then oblique inwards and curved round the large fovea, marked with dark brown on the veins ; second line at two-fifths of costa, waved and oblique inwards, approaching and running parallel to first line, to before middle of inner margin, touching the dark brown cell-spot ; outer line at two-thirds, vertical and slightly waved, marked on inner margin by a dark brown spot, followed by a pale fulvous suffusion leaving whitish patches on hindmargin at and below apex and in middle of hindmargin, and forming a deeper fulvous patch at anal angle ; marginal spots and the excision fulvous.

Hindwing : with a fulvous antemedian line ; the postmedian denticulate followed by a fulvous shade, leaving the margin whitish ; marginal spots brown.

Underside ochreous, with the fulvous markings redder.

Face and palpi fulvous ; thorax and abdomen ochreous, speckled with fulvous.

Expanse of wings : 35 mm.

1 ♂ from Bulim, N.W. Ecuador, 160 ft., January 1901 (Flemming & Miketta).

SUBFAMILY ENNOMINAE.

136. *Acrotomodes croceata* spec. nov.

Forewing : yellowish straw-colour, with sparse but large transverse olive-fuscos striae ; costal streak olive-grey, towards costa dotted with pale, the extreme apex pale ; lines dark olive-fuscos ; first strongly rounded at middle from one-fifth of costa to one-fifth of inner margin, preceded by pale grey scales and followed by some olive-green ones ; outer line from before middle of inner margin, at first curving inwards towards first line, then running obliquely straight and slightly dentate on veins to close to hindmargin above vein 6, where it is angled and reflexed to a dark costal spot at five-sixths, inwardly preceded by an olive-green shade and followed by a grey and then an olive one ; cell-spot small, dark ; a little before it on costa the beginning of an obsolete median line ; marginal area olive-grey, striated with darker, the edge of the dark area vertical and straight from anal angle to outer line, above which it as well as the reflexed arm of the outer line itself is interrupted by the pale ground-colour which runs into apex ; fringe olive-grey, with a paler basal line.

Hindwing : with slight striation ; a distinct black cell-spot, followed by a fine median line ; a very faint marginal border indicated by striae, especially at apex ; fringe yellow.

Underside much gayer : forewing lemon-yellow ; lines and striae olive-brown ; dark marginal area deep brown and fuscons, running through to costa and containing a pale zigzag submarginal line ; the apex cream-colour : hindwing tinged with fulvous, the striae rich brown ; both wings with distinct black cell-spots.

Face, antennae, vertex, and shoulders olive-grey ; patagia, thorax, and dorsum straw-colour like wings ; underside of body, legs, and palpi fulvous yellow ; fore and middle legs externally fuscons.

Expanse of wings : 52 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6000—10,000 ft. (Böttger). Apex of forewing truncate, projecting shortly and bluntly above vein 7 ; hindmargin bulged in middle.

137. *Acrotomodes sporadata* spec. nov.

Forewing: liver-brown, strongly flushed with lilac-grey; the lines dark brown, starting from outwardly oblique dark brown streaks at two-fifths and two-thirds, the first angled sharply on subcostal, the second on vein 7, then oblique inwards parallel to each other: the outer line is met at the angle by a dark line from before apex, and is followed below the middle by an irregular reddish brown cloud; costal edge ochreous between the lines; apex with a patch of small hoary grey partially confluent spots, which are also visible but more scattered above anal angle; fringe dark brown with paler tips, especially just below apex.

Hindwing: with the two lines divergent towards inner margin and not reaching above subcostal vein; hindmargin with a deep brown cloud.

Underside pale reddish fawn-colour, with a few black specks; the forewing with a dark brown straight line from before apex to two-thirds of inner margin, the area beyond it reddish fulvous, becoming pale grey at apex.

Face, palpi, and forelegs red-brown; thorax and abdomen paler, mixed with grey; vertex and collar whitish grey; anal tuft ochreous.

Expanse of wings: 30 mm.

3 ♂♂ from Chanchamayo, Peru (Schunke); also from Charaplaya, Bolivia. On the underside these ♂♂ are almost identical with those of *A. hepaticata* Warr., from S. Brazil.

138. *Aeschropteryx tetragonata* ab. *solitaria* nov.

This name is proposed for the much paler form of *tetragonata* Guen., in which the outer line of forewing and central line of hindwing is not double, but single, and quite pale brown; in the type form the outer arm of the double line is continued to apex of forewing; in the aberration, where this arm is absent, the inner arm is simply retracted to costa from the acute angle on vein 6.

2 ♂♂ from Cundinamarca, Colombia, August 1903 (de Mathan), sent with several of the ordinary dark form.

139. *Anisoperas bimaculata* spec. nov.

Forewing: olive-fuscons, striated with darker; the central area deep brown; costa with pale brown striae; lines fine, slightly darker; first from two-fifths of costa to two-fifths of inner margin, vertical and nearly straight; outer line from three-fourths of costa oblique outwards to vein 6, there bluntly bent and sinuous inwards to three-fifths of inner margin, faintly lunulate between the veins and edged with a fine pale line; the line forms a deep sinus from vein 3 to 1, where it is toothed outwards; within the projection beyond cell lies an irregularly quadrate blotch of pale yellow marked with orange specks, the veins also orange across it; another broken blotch lies on vein 1 between the two lines; a slight grey patch on costa at apex, and a dark shade vertical from anal angle indicate the submarginal line; fringe deep olive-brown at base, paler at tips, with a bronzy line between and a fine line of pale scales along margin at their base; cell-spot linear.

Hindwing: with the outer line dentate-lunulate, the space within it bronzy brown; cell-spot linear.

Underside of forewing fuscous grey, with a lilac tinge, and the blotch beyond cell quite plain : hindwing paler, with grey striations.

Head, thorax, and abdomen all olive-fuscous.

Expanse of wings : 30 mm.

2 ♀♀ from Limbani, Carabaya, 9000 ft., February and March 1904 (Ockenden). In the second example the pale blotches are much interrupted and smaller. The species is closely allied to *A. albimorsa* Warr., from Peru.

GENUS *Azelina* Guen.

In introducing the genus *Pero*, I find that Herrich-Schaeffer assigns to it the possession of simple antennae in the ♂. The employment of Guenée's *Azelina* for these species and of *Pero* for those with pectinated antennae is therefore incorrect; and as Guenée in introducing *Azelina* says "antennes variables," I shall in future invert the use of these generic terms, using *Azelina* Guen. for the species with pectinated antennae in the ♂, with *poaphilaria* Guen., to which he expressly refers, as type.

140. *Azelina geminipuncta* spec. nov.

Forewing: with the basal and marginal areas dark grey; the broad central area olive-fulvous, brighter towards costal and inner margins, shaded with grey below median; the lines dark brown; first oblique from one-fourth of costa, edged inwardly with fulvous on costa, forming a rounded projection above median and another below submedian, vertical between; outer line from four-fifths of costa to three-fourths of inner margin, slightly and roundly projecting beyond cell and on submedian fold, bisinuate before inner margin; preceded by a dark brown shade with straight inner edge; cell-spot formed of two black superimposed dots, surrounded by white scales; the grey immediately beyond outer line paler, with traces of a dark line parallel to the outer line; extreme apex fulvous-tinged; fringe dark grey; costal edge and the two grey areas with fine dark striae.

Hindwing: brownish fuscous with a dark paler-edged curved line from just above anal angle; a fulvous patch along submedian fold above the line, the anal area grey below it; fringe fulvous.

Underside obscurely fuscous; forewing in centre towards costa fulvous, the edge dotted with black; cell-spot white; of the hindwing dark with whitish edge.

Head, thorax, and abdomen dark grey; legs pale.

Expanse of wings : 35 mm.

4 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6—10,000 ft. (Böttger); very much like *A. vulpecula* Dogn., but smaller and darker.

141. *Cartellodes olivaria* spec. nov.

Forewing: olive-drab, deeper towards hindmargin, finely striated throughout with darker; lines pale yellow; first curved from one-fourth of costa to one-third of inner margin, outwardly edged with orange; outer line straight from three-fifths of inner margin towards apex, acutely angled on vein 7 and retracted to costa, where it is followed by a white spot; on veins 6 and 7 the line is marked by a black acutely white-tipped dash; it is edged inwardly with orange; a slight brown cell-spot; costa and veins yellowish buff; fringe yellowish with brown base.

Hindwing: with the line central.

Underside pale yellow, with a diffuse purplish fuscous border, not reaching inner margin; the extreme margin and fringe pale yellow.

Thorax and abdomen pale grey; head darker grey: shoulders ochreous like costal border; collar dark brown; abdomen below and legs yellow.

Expanse of wings: 30 mm.

1 ♂ from Pozuzu, Huamco, Peru, 9000 m. (W. Hoffmanns).

Forewing with fovea.

142. *Certima leucaniata* spec. nov.

Forewing: pale fawn-colour, towards base and along costal region overspread with rusty brown; the veins all finely darker and the interspaces filled with horizontal light and dark lines, as in many species of *Leucania*; the lines marked only by vein-spots; the inner line oblique outwards from one-fourth of costa to two-fifths of inner margin, marked by distinct black spots inwardly pale-tipped; the second line of spots close to hindmargin; the spots small, preceded by a dark rusty brown shade from five-sixths of costa to two-thirds of inner margin; cell-spot black; the marginal area is really grey, thickly dusted with rufous scales; fringe the same.

Hindwing: cream-colour, with black cell-spot and outer line of black spots close to margin, which beyond the spots is dusted with rufous; inner margin with ochreous hairs.

Underside cream-colour, rust-coloured along costa of forewing, and with a square blotch of the same before outer line of spots: hindwing dusted with rusty scales and with a rusty submarginal band; cell-spot and outer line of spots as above.

Head and thorax rusty brown, patagia paler; abdomen like hindwings.

Expanse of wings: 40 mm.

3 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6–10,000 ft. (Böttger).

143. *Cnephora catocalaria* spec. nov.

Forewing: olive-green, dusted with bluish white scales, most thickly at base and along costal and inner margins; the lines plum-coloured on costa, becoming olive-green below and marked by a fine edging of pale scales; the streaks on costa thick and oblique outwards, at one-fourth, one-half, and three-fourths; the first line forming slight projections outwards above and below median vein; the outer sharply angled on vein 7, then irregularly waved to three-fourths of inner margin; submarginal line zigzag, bluish white, starting from a fourth plum-coloured spot before apex; cell-spot black, distinct: fringe greenish, mottled with white between veins and plum-colour beyond them.

Hindwing: yellow-ochreous in basal two-thirds, suffused with dull fulvous and dark speckled beyond a dark postmedian line parallel to hindmargin; cell-spot black; anal angle greenish speckled with whitish; fringe fulvous beyond a dull green marginal line.

Underside of forewing yellow, tinged and speckled towards costa with fulvous-orange; a white costal blotch before apex edged with fulvous-brown; traces of a pale straight outer line; cell-spot black; fringe olive-brown mottled with white: hindwing deeper yellow thickly dappled with orange-fulvous; marginal area darker, shaded with pale lilac towards anal angle; inner margin wholly pale yellow, with the fringe fulvous.

Vertex, thorax, patagia, and dorsum olive-green; the hair of the patagia sprinkled with pale scales; antennae green, speckled with white towards base; face, pectus, and abdomen beneath deep orange-fulvous; legs deep fulvous, marked with black and white scales at the joints; palpi brownish fulvous.

Expanse of wings: 44 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6–10,000 ft. (Böttger).

Colpodonta gen. nov.

Forewing: costa straight, with a slight inflection beyond middle; apex blunt; hindmargin irregularly oblique outwardly to vein 4, then inwardly, forming two deep sinuses on each side of vein 3, which forms a similar projection outwards between them.

Hindwing: with hindmargin curved, crenulate in upper half.

Antennae of ♂ simple; palpi porrect, short; thorax and pectus thickly haired.

Neuration: forewing, cell half as long as wing; discocellular concave; first median nervule a little beyond middle, second close to third; radials normal; 7, 8, 9 stalked; 10, 11 separate, 11 anastomosing with 12, and 10 with 11; hindwing costal shortly approximated to subcostal; 3 and 7 close to angles of cell.

Type: *Colpodonta pimienta* Dogn. (*Azelina*) = *phyllodontaria* Warr.

The diagnosis of the genus was omitted in *Nov. Zool.* xi. p. 569, where the type species was described under the name of *phyllodontaria*.

144. *Euclysia ochrivitta* spec. nov.

Forewing: lilac-grey, covered with indistinctly darker slender transverse striations; costal edge narrowly pale; no cell-spot or inner line visible; the outer line takes the form of an ochreous band from costa just before apex to inner margin before anal angle, bent at middle, the upper half oblique inwards, the lower vertical; from vein 2 to 4 the outer edge of the band is pale brown; fringe lilac-grey tinged with brownish, white-tipped between the veins, which run out into small sharp teeth.

Hindwing: with the ochreous band straight; the veins, as in forewing, paler.

Underside paler.

Head, thorax, and abdomen pale grey, the abdomen somewhat darker.

Expanse of wings: 60 mm.

1 ♂ from Yungas de la Paz, Bolivia, September 1899, 1000 m. (Garlepp).

The angle at vein 4 in both wings prominent. The species is closely related to *Euclysia carneata*, from Santo Domingo, S.E. Peru, described by me as a *Phyllodonta* in *Nov. Zool.* xi. p. 166.

145. *Eutomopepla albicollaris* spec. nov.

Forewing: uniform fawn-colour, speckled with darker; lines very obscure; a median from a dark costal spot just beyond middle, and a submarginal from a similar spot before apex to close before anal angle; a black cell-spot; fringe rufous, silvery white in the excisions below middle; costa slightly ochreous.

Hindwing: with both lines more distinct; hindmargin from middle to anal angle blackish; fringe rufous, tipped with white between the veins.

Underside bluish grey in basal two-thirds, marginal third olive grey-brown; fringe reddish.

Face and collar ochreous grey, vertex and shoulders white; thorax and abdomen like wings; legs whitish, flecked with blackish.

Expanse of wings: 40—44 mm.

2 ♂♂ from Chanchamayo, Peru (Schunke).

Geitonia gen. nov.

Allied to *Anisopercas* Warr., differing from that genus as follows: the forewing has a small fovea at base; the antennae, which are quite simple and filiform, even in the ♂, are four-fifths of the length of the wing; veins 10 and 11 rise separate, 11 anastomosing with 12, and 10 with 11, and again at a point with 8, 9.

Type: *Geitonia gracililinea* spec. nov.

146. *Geitonia gracililinea* spec. nov.

Forewing: dark red-brown, with deeper transverse striae; costa with small white streaks; first line at one-fourth, very indistinct, outcurved above and below median; outer line very fine, white, from costa close before apex to just before anal angle, obscurely dentate but forming one distinct outward angle on vein 7, followed by a dull greenish space traversed by a dark grey lunulate line: a grey spot at apex; cell-spot large, dull green, with a dark centre; fringe concolorous.

Hindwing: similar: the green beyond outer line more extensive; traces of a dark centre line, which probably exists also in the forewing, when fresh.

Underside pale grey-brown, darker speckled, and dark brown along hind-margins; outer line marked by dark and light specks on veins.

Head and thorax black-brown: abdomen paler, like underside and legs.

Expanse of wings: 35 mm.

1 ♂ from Boquete, Chiriqui, 3500 ft. (Watson).

I have seen another example, also a ♂, from Huatuxco, Vera Cruz.

147. *Gynopteryx ligulifera* spec. nov.

Forewing: dull yellow in the marginal area beyond the oblique outer line: ochreous, densely dusted and tinged with pale reddish brown in the basal two-thirds; the first line is diffuse and obscure, from one-third of costa running out to near before the black cell-spot, then angled and oblique inwards to about one-fourth of inner margin; outer line double, olive-brown from just before apex to beyond middle of inner margin, broadening downwards, marked between the lines by white dashes on the veins; at vein 7 it is angled and shortly retracted to costa, followed from the angle to apex by some whitish scales; submarginal fine, grey, hardly traceable; fringe brown in basal half, whitish beyond.

Hindwing: wholly dull yellow except the costal area, which is ochreous slightly speckled: a small cell-spot; outer line at two-thirds, narrowed at each end; submarginal line rather plainer, bent above middle; fringe as in forewing.

Underside with the pale ground-colour almost hidden by dense brown striation; the two outer lines also dark; inner margin of both wings pale; apex of forewing whitish.

Head and abdomen ochreous, speckled with darker, the dorsum yellow-tinged; thorax yellowish, the shoulders reddish; abdomen beneath like underside of wings.

Expanse of wings : 44 mm.

1 ♀ from Castro, Parana (E. D. Jones).

I have seen another ? from the same locality, but no ♂♂.

148. *Herbita castanea* spec. nov.

Forewing : deep fulvous with coarse dark speckling ; costa snow-white flecked with black ; first line at one-fourth, from subcostal vein to inner margin, marked by dull blackish blotches between the veins and smaller ones with whitish dashes on them ; cell-spot black ; outer and submarginal lines lunulate-dentate, marked by blackish white-tipped teeth on the veins, the lunules themselves hardly visible ; the outer line starts from a large white costal spot, runs obliquely outwards to vein 6, then inwards to three-fourths of inner margin, the tooth on vein 5 displaced basewards, large and black ; a large semi-oval costal blotch, filled up with blackish and grey scales and with brown scales along costal edge, the white costal spot standing on its inner edge ; fringe concolorous, with the tips white ; marginal area beyond outer line slightly darker than the rest of wing.

Hindwing : with cell-spot and the two outer lines.

Underside pale fulvous with dark speckles ; cell-spots black, distinct ; outer and submarginal lines lunulate-dentate, finely whitish and marked by white points on veins, the space between them darker ; marginal area sprinkled with whitish scales, forming a blotch at apex.

Face, vertex, and palpi white mixed with brown-grey ; back of vertex, shoulders, patagia, and thorax bright fulvous ; abdomen fulvous ochreous, with some dark spots on dorsum ; legs mottled brown and white.

Expanse of wings : 56 mm.

1 ♀ from Tuis, Costa Rica.

Mr. Schaus has two examples, both ♀♀, which he is unable to refer with certainty to any of the known male forms.

149. *Hygrochroma ? cervinata* spec. nov.

Forewing : reddish fawn-colour with a few darker striae ; costa rather paler, and with a white spot shortly before apex ; first line deeper fawn at one-fourth, forming small curves between the veins edged inwardly by some slightly lustrous lilac scales ; outer line from costa before the white spot, oblique outwards and angled on vein 7, then oblique inwards, lunulate-dentate, to three-fifths of inner margin, finely edged outwardly with lustrous lilac and followed by lustrous grey scales before a thick black straight shade running from below angle of line ; a dark fawn median shade, curved at costa and touching outer line on inner margin ; a small grey cell-spot ; marginal area lilac-tinged ; fringe dark fawn.

Hindwing : with all the markings except first line, but fainter ; cell-spot large, round and black ; traces of a waved paler submarginal line.

Underside of forewing paler, more lilac-tinged, with dark striations ; inner and median shades faint ; a straight brown thick outer line from apex to two-thirds of inner margin, the margin beyond ferruginous ; hindwing yellow with brown speckling ; traces of the lines towards costa ; a round brown cell-spot.

Head, thorax, and abdomen like wings ; face and palpi darker fawn-colour.

Expanse of wings : 56 mm.

1 ♀ from Cananche, Cundinamarca, Colombia, August 1903 (de Mathan).

150. *Ira capnodiata* ab. *reducta* nov.

Rather smaller in point of size, both wings deeper brown than in typical *capnodiata* Guen., with a darker median shade; the white apical blotch only about half as large, only just reaching below vein 7; the two dark blotches on inner margin at the end of the lines entirely absent.

Expanse of wings: 48 mm.

3 ♂♂ from Chanchamayo, Peru (Schunke).

These came with several others of the type form; it is probably merely a local aberration, as I do not remember to have seen examples from other localities.

151. *Ira crenulata* spec. nov.

Forewing: olive-brown; the space between the inner and outer lines, except along costa and on inner margin, fuscous brown; first line curved and marked by white points on veins, from one-fourth of costa to one-third of inner margin; outer line lunulate-dentate, oblique inwards from the costal blotch to the sub-median fold, then running outwards, marked by white points on the veins; cell-spot small, black, in a grey ring; costal streak olive-brown, costal edge in basal half dotted with white; costal blotch before apex roughly semicircular, brownish ochreous with small brown clouds externally and there whitish-edged; from the outside of it a slightly marked darker dentate submarginal line descends to before anal angle; fringe brown.

Hindwing: olive-brown, darker before postmedian line at two-thirds.

Underside grey-brown speckled with dark, the outer line thick; marginal area in both wings rufous brown; costa of forewing with a white spot before apex.

Head and thorax olive-brown; abdomen and legs greyer brown, the legs mottled dark.

Expanse of wings: 52 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6—10,000 ft. (Böttger).

Distinguished by the crenulate hindmargin of both wings; the forewing slightly projecting beyond cell, the hindwing with a small blunt tooth at vein 4.

152. *Isochromodes denotata*.

Isochromodes auxilians ab. *denotata* Warr., Nov. Zool. xi. p. 147 ♀ (1904).

When describing this species I had 3 ♂♂ of the type form and a single ♀, which was then treated, doubtfully, as an aberration. Another example of the latter, a ♂, has at last arrived, and there is not much doubt that *denotata* must be considered as a distinct species, not an aberration.

♂. *Forewing*: greyish ochreous (not wood-brown as in *auxilians* ♂) dusted with darker; the costa with grey striae and brownish at base; first line from nearly one-third of costa to beyond one-third of inner margin, bent outwards in cell and again on submedian vein, vertical or concave outwards between, finely black, accompanied by brown scales outwardly, and preceded by a grey line; outer line from five-sixths of costa to two-thirds of inner margin, shortly oblique outwards, angled on vein 7 and below 4, concave between, concisely black, followed by a grey shade; median line greenish mixed with brown, and with blackish scales towards inner margin, oblique outwards to 6, then vertical to 4, thence wavy and slightly

incurved to inner margin close to outer line ; a slight dark cell-spot ; some grey markings at apex and two >s between 2 and 4 ; marginal line fine, black : fringe concolorous.

Hindwing : with median and outer lines only ; the marginal area browner throughout, as also in forewing.

Underside much paler, the markings indistinct, except the outer line and cell-spots.

Head, thorax, and abdomen all ochreous ; collar and outside of palpi brown ; face whitish ; basal and prae-anal segments of abdomen marked with brown scales.

The ♂ agrees with the ♀ in size, and was taken at the same place, Santa Domingo, S.E. Peru, in October 1902 (Ockenden).

153. *Microgonia affinis* ab. *intensa* nov.

In specimens of this species from Peru there is a tendency for the lilac scales to become whitish and the dark striae blackish. In the ♂♂ the contrast is not so conspicuous, but in one ♀ the whole of the basal and marginal areas of forewing is blackened, except the large pale round spot on inner margin beyond outer line, and the whole hindwing is blackish. In the coloration of the underside there is no difference.

2 ♂♂ from Huancabamba, Cerro de Pasco, Peru, 6—10,000 ft. (Böttger), and 1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6000 ft., June 1902, dry season (Ockenden).

154. *Microgonia alternata* spec. nov.

Forewing : pale fawn-colour, sometimes with a slight violet-grey suffusion ; a few fine dark striae along costa ; the lines a little darker, but generally faint ; basal line outcurved, from one-fourth of costa to fully one-third of inner margin ; outer line straight from three-fifths of inner margin towards apex, acutely angled on vein 7 and retracted to costa, where it is thickened and brownish ; externally it is often marked with slight white dashes on the veins ; in one case the line is olive-brown and distinct, preceded by a dark shade ; above the retracted portion on the costa is an oval space of ground-colour edged by whitish scales, the outer margin bilobed ; a dark shade along hindmargin, and a slight dentate-lunulate submarginal shade ; a small dark cell-spot, beyond which a faint median line curves, followed by a broad shade, both plainer in the darker examples ; fringe fawn.

Hindwing : with the line central ; the costal area paler ; beyond the line a coal-black bilunate blotch, followed by a curved black streak connected with the faint submarginal shade ; the pale costal area generally black-speckled.

Underside brighter, the marginal area brown : an outer dark line, dotted on the veins, angled above vein 6 in the forewing and outcurved in the hindwing, the basal areas black-speckled ; inner margin of forewing pale ochreous, with a large round coal-black blotch beyond outer line, and a pale whitish-edged apical patch.

Thorax and abdomen concolorous with wings ; face, palpi, and collar browner ; vertex snow-white ; legs fawn-colour speckled with fuscous.

Expanse of wings : 65—75 mm.

3 ♂♂ from Dominica, West Indies (E. A. Agar).

A very smooth-looking insect : the hindmargin of hindwing is bluntly bent at middle. In the white vertex and the black markings on upperside of hindwing it resembles *vesalia* Crana., from which it is distinguished by the large black blotch on forewing beneath.

155. *Microgonia coarctata* spec. nov.

Forewing : olive-brown in median area, the basal and marginal fields being filled with black-brown suffusion, the base itself cinereous olive ; lines black-brown ; first from nearly one-third of costa to just before middle of inner margin, faintly outcurved above and below median ; outer line from three-fourths of costa, oblique outwards to vein 7, there acutely angled and oblique inwards, nearly straight, to near middle of inner margin close to first line ; costal area olive-ochreous, greyer towards base, and spotted with grey ; the outer line followed on costa by a pale spot ; cell-spot black, lying in a dark blotch which fills up the cell ; submarginal line marked by slight pale dashes on veins ; some white scales before apex ; fringe olive-rufous, the tips white.

Hindwing : with the straight line slightly antemedian ; an obscure blackish zigzag submarginal line ; fringe rufous, with white tips.

Underside drab, densely striated with fuscous ; cell-spots black ; marginal area of forewing blackish, with a pale waved submarginal line.

Head, thorax, and abdomen dark cinereous olive ; the patagia very long.

Expanse of wings : 44 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6—10,000 ft. (Böttger).

The apex of forewing is minutely produced, the hindmargin bowed.

156. *Microgonia crepusculata* spec. nov.

Forewing : greenish ochreous, densely suffused and striated with olive-fuscous and brown ; the lines thick, brown ; first from costa before one-third, bent in cell, then vertical, forming two lunules above and one below the submedian vein : the basal area within it suffused with olive-brown ; outer line from three-fifths of inner margin straight towards apex, angled on vein 7 and retracted to costa, velvety olive-brown ; a broad olive-brown median shade beyond the dark cell-spot, hiding the striations ; marginal area filled with olive-fuscous suffusion except a large pale patch on inner margin before anal angle and a variably paler shade before margin ; fringe olive-brown.

Hindwing : with the line central, bent at vein 6 ; the whole wing suffused with olive-brown except a subquadrate patch at apex, bounded inwardly by a dull blackish blotch and traversed by the irregularly waved brown submarginal line, which through the darker portion of the wing is preceded by a paler tint ; fringe olive-brown.

Underside dull fuscous with an olive tinge, striated with dark and suffused with darker beyond outer line ; submarginal shade dark, dentate-lunulate ; an outer line in hindwing dentate, in neither wing corresponding to that of upperside.

Head, thorax, and abdomen dull olive-fuscous.

Expanse of wings : 70 mm.

1 ♂ from Dominica, West Indies (E. A. Agar).

The lines and shape of wings are like *M. rhoda* Butler from Chili, but the coloration is quite different.

157. *Microgonia praeditaria* ab. *rufa* nov.

This form differs from Herrich-Schaeffer's species in being entirely of a bright rufous instead of ochreous; the speckling is less conspicuous, and the inner line almost absent; the outer line is deeper red, edged with a pale line, and the fringe is red, not dark brown as in the type. The underside of the wings and the thorax and abdomen are slightly paler red; the head and collar dark grey, as in the type form.

The example, which is a ♂ of normal size, came along with two others from Cananche, Cundinamarca, Colombia, September 1903 (de Mathan).

158. *Microxydia gigantula* spec. nov.

Forewing: pale yellow, sprinkled with brown atoms; first line indistinct, probably variable, bent in cell, then vertical to one-third of inner margin; an equally obscure cell-spot; outer line curved from three-fifths of inner margin towards apex, above vein 6 darkened and angled, retracted to costa, followed by a triangular costal blotch, all chestnut brown; the line itself is followed by a brown shade forming a band, and is marked indistinctly on veins by blackish pale-tipped dashes; fringe yellow, tinged with darker in the middle.

Hindwing: paler, especially towards costa; the outer band running from inner margin only to vein 6.

Underside deeper yellow; the brown markings duller; band of hindwing complete, bent, inner margin of both wings whitish.

Thorax and abdomen yellow; face and vertex whitish.

Expanse of wings: 30 mm.

1 ♀ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden), a third as large again as *orsitaria* Gnén., and of different shape.

159. *Microxydia pumaria* spec. nov.

Forewing: sandy rufous, thickly packed with grey-brown striae; the costal and hindmargins slightly darker; the two lines brown; the first at one-third, curved; the outer from nearly three-fourths of costa to two-thirds of inner margin, faintly sinuous, being a little outcurved just below costa and incurved on submedian fold; followed by small but distinct pale dots on the veins; the inner line is preceded by similar, but less distinct dots; cell-spot brown; fringe rather paler than ground-colour, but grey at base.

Hindwing: with outer line only, from two-thirds of costa to above anal angle, hardly curved; cell-spot brown.

Underside paler, less rufous; the marginal area darker; cell-spots distinct; an outer brownish line on both wings parallel to hindmargin throughout.

Head, thorax, and abdomen concolorous with wings; face somewhat darker.

Expanse of wings: 27 mm.

1 ♂ from Pozuzo, Department Huancayo, Peru (Hoffmanns).

160. *Pergama dissimilis* spec. nov.

The type form of *pumaria* Feld. is greyish fawn throughout in the forewing; in *dissimilis* the basal portion as far as outer line is suffused with dark purplish grey or brown, the marginal area, in striking contrast to it, being bright pale ochreous

with a few olive clouds. The hindwing, which in the type is more or less yellowish, is also ochreous, but of a deeper tone than in the forewing.

On the underside the contrast of colours is equally marked, the dark outer portions of both wings being of a rich deep golden brown.

The thorax and patagia are dark purplish grey like the basal suffusion of forewing, the abdomen agreeing in coloration with the hindwing.

1 ♂ from Chauchamayo, Peru (Schunke).

161. *Pero externata* spec. nov.

Forewing: dark greyish fawn-colour, a broad pale ochreous costal blotch lying between the two lines, and the central fascia throughout in its outer half tinged with ochreous; the two lines dark brown, both nearer than usual to hindmargin; the first oblique outwards from just before middle of costa, nearly touching the small white hyaline cell-spot, reaching inner margin just before middle, the projection below the median vein slight, preceded by a deeper grey tinge; outer line from five-sixths of costa to three-fourths of inner margin, slightly incurved between vein 5 and the submedian fold, forming there outward lunules between the veins and teeth pointing inwards upon them; indistinct traces of a dark line beyond and parallel to it; a dark apical streak, and black submarginal dots.

Hindwing: dark greyish fawn, with an ochreous anal tinge and two dark lines from inner margin, that close above anal angle running across wing to costa before apex, the upper one soon lost in the grey of the wing.

Underside paler grey, the outer line in both wings distinct, blackish brown, and marked more plainly by dark vein-spots; the pale ochreous costal blotch of forewing shown; hindwing with an ocelloid cell-spot.

Head, thorax, and abdomen grey; the face and shoulders paler, more ochreous. Expanse of wings: 27 mm.

1 ♂ from Castro, Parana (E. D. Jones).

Forewing toothed at veins 3 and 6; antennae of ♂ simply lamellate.

The species may be distinguished from *minima* Butler by the more exterior position of the two lines of forewing.

162. *Pero ravida* spec. nov.

Forewing: flesh-coloured grey dusted with darker; but the whole basal two-thirds of wing as far as outer line filled up with dark velvety purplish brown, except the costal region, which remains of the ground-colour, but with a strong purplish suffusion; lines black; first from hardly one-fourth of costa, forming the usual blunt projection above median vein, then oblique inwards forming a slight curve, and obsolete below submedian vein; outer line from two-thirds of costa to two-thirds of inner margin forming two slight outward curves on the two folds with an equally slight sinus between them; the dark grey striae form a sort of band beyond the line and a broad shade along outer margin from apex to middle, with a few dark patches on veins in the paler space between the two shades; cell-spot linear, vertical, hyaline white; fringe dark grey above, pinkish grey towards anal angle; a single submarginal dark dot between veins 2 and 3.

Hindwing: pinkish grey, darker from base to outer line, which is pale with a dark inner edge; fringe pinkish grey with paler basal line.

Underside smooth, dark brown; inner margin of forewing glossy ochreous; cell-spot as above; outer line pale, starting from a pale costal spot, followed by a broad shade with straight defined outer edge, between which and the margin is a triangular pale blotch above anal angle: hindwing darker brown; cell-spot large, black, edged and crossed by ochreous scales; outer line ochreous; a blackish blotch at anal angle.

Head, shoulders, and abdomen dark red-brown; patagia deep velvety brown like the centre of forewing; pectus and underside of abdomen red-brown; all the legs olive-ochreous, unspeckled, the spurs with black rings.

Expanse of wings: ♂ 52 mm.; ♀ 48—56 mm.

2 ♂♂, 2 ♀♀ from Limbani, Carabaya, S.E. Peru, 9500 ft., April 1904, dry season (Ockenden).

Fore and hindwing without projections, but with minute denticulations of the fringe beyond veins; one ♀ is smaller and paler.

163. *Perusia verticata* spec. nov.

Forewing: pale straw-yellow, covered with faint olive striae; costa streaked with olive-brown; first line faint, from one-fourth of costa to two-fifths of inner margin, thick and bulged above and below median vein; a faint cell-mark; an olive-brown band vertical from anal angle to costa, where it widens out towards apex; it is marked by a curved series of dark vein-dots, that on vein 6 black and wedge-shaped, projecting outwards, another above vein 7 nearer apex, followed to apex by whitish and grey scales; fringe concolorous.

Hindwing: whiter, straw-colour only towards inner margin, with faint traces of a curved submarginal line.

Underside whitish straw-colour; the band of forewing brown; costa brown at base; hindwing with a submarginal row of vein-dots.

Head, thorax, and abdomen concolorous.

Expanse of wings: 24 mm.

1 ♂ from Huancabamba, Cerro de Pasco, Peru, 6400 ft. (Böttger).

164. *Pyrinia abditaria* spec. nov.

Forewing: dull deep red, crossed by very obscure deeper red bands; inner band at one-third, broad, its outer edge strongly angled on median vein at end of cell; two outer bands, submarginal and near together, narrower, and parallel to hindmargin; fringe deep red at base, with the tips pale; costa yellowish with short dark streaks.

Hindwing: with ground-colour lighter, passing into fulvous towards inner and hindmargins; a postmedian deep red band, and a broader submarginal one, preceded by a narrow red line; fringe as in forewing.

Underside fulvous yellow with some red striae; the angle of the inner band shown in midwing; a broad curved submarginal band outwardly lunulate or dentate, with some violet scales in middle; hindwing almost without striae, with the three lines very distinct.

Head, thorax, and abdomen red; face and palpi below yellowish.

Expanse of wings: 24 mm.

1 ♂ from Chanchamayo, Peru, August 1901 (Garlepp).

165. *Pyrinia hemixantha* spec. nov.

Forewing: deep yellow in basal half, with a slight olive tinge towards costa, the striae at costa brown, below orange; a slight brown spot at end of cell, and another obliquely below it towards base; outer half of wing purplish brown, diffusely edged internally, with a small lustrous blotch on costa before apex and containing towards anal angle a deep blackish blotch; fringe brown with a yellow spot at apex.

Hindwing: deep yellow with orange striations; a slight central line, and deeper marginal border, becoming deep brown at apex; fringe orange.

Underside the same, the markings clearer; costal spot of forewing silvery.

Head, thorax, and abdomen yellow.

Expanse of wings: 24 mm.

1 ♂ from Cuzco, Peru, April 1901 (Garlepp).

Near *P. cubaphe* Feld.

166. *Pyrinia humerata* spec. nov.

Forewing: pale clear yellow, towards apex and hindmargin tinged with rosy brownish, the extreme apex dark brown; a small dark cell-spot; a double reddish lilac line from vein 7 close before apex to beyond middle of inner margin, the space between the two arms darker yellow; fringe rosy brown.

Hindwing: with the double line central; marginal area with a few dark specks.

Underside flushed with darker yellow; the two lines represented by deep purple streaks, not reaching below vein 1; the streak in forewing broadening downwards, that in hindwing commencing broad on costa and thinning off.

Face and vertex greyish brown; thorax, abdomen, legs, and palpi pale yellow.

Expanse of wings; 44 mm.

1 ♀ from Santo Domingo, Carabaya, S.E. Peru, 6500 ft., October 1902, dry season (Ockenden).

Like *pholata* Guen., but much larger; and with a strong shoulder at one-fourth from base of costa of forewing.

167. *Pyrinia tenuilinea* spec. nov.

Forewing: coppery fulvous, suffused with olive, the apical third dark brownish olive; costal edge pale ochreous with fine oblique black marks; the costal area above subcostal vein more olive-ochreous; the whole wing with fine dark transverse striae; lines dark, but very fine; first from a dark spot at one-third of costa to two-fifths of inner margin, outbent above and below median vein; outer line from shortly before apex to three-fourths of inner margin, waved, only visible above inner margin, the rest being lost in the dark suffusion; it is followed on costa by a small lustrous spot below an ochreous one; from the extreme apex a submarginal line starts to anal angle, but is scarcely traceable; fringe deep fulvous, with a pale spot at apex.

Hindwing: bright coppery fulvous, without the olive tint; a fine slightly curved line just beyond middle, not reaching above vein 7, and another from apex to anal angle; at the apex a small brown cloud; fringe bright fulvous.

Underside bright fulvous; forewing with a dark brown submarginal shade from

apex to anal angle marked below costa by a lustrous spot ; fringe and marginal line black-brown, the fringe fulvous towards apex and anal angle : hindwing with the two lines of upperside reproduced.

Head, thorax, and abdomen bright fulvous ; face darker, white at base.

Expanse of wings : 26 mm.

4 ♂♂ from Cananche, Cundinamarca, Colombia, August 1902 (de Mathan).

Distinguished from *incensata* Wlk., to which it bears great outward resemblance, structurally by the absence of the fovea in forewing ; the lines are slender and waved, instead of being straight and thick, and the apical cloud is much more conspicuous.

Stenodonta gen. nov.

Forewing : elongate ; costa nearly straight, convex at base and before apex, inflexed beyond middle ; apex produced ; hindmargin toothed at vein 6 and bluntly elbowed at 3, straight from 6 to 3, concave below.

Hindwing : hindmargin shortly toothed at vein 3, and slightly at 6.

Antennae (♀) serrate ; palpi porrect, terminal segment small ; tongue and frenulum present.

Neuration : forewing, cell more than half as long as wing ; discocellular vertical, short, the subcostal and median veins being inflected ; first median at two-fifths, second close before third ; lower radial from a little below the upper ; 7, 8, 9 stalked ; 10, 11 free ; 11 approximating to 12 but not anastomosing ; 10 anastomosing at a point with 8, 9 : hindwing, costal and subcostal approximated for half cell ; veins 3 and 7 just before angles.

Type : *Stenodonta incurvata* spec. nov.

Allied to the *Pero* group, but of weaker structure.

168. **Stenodonta incurvata** spec. nov.

Forewing : pale brown ; the lines dark brown, diffuse, thickened at costa ; first curved from one-fourth of costa to one-fourth of inner margin ; second from five-sixths of costa incurved to middle of inner margin ; cell-spot blackish, at top end of discocellular ; fringe concolorous.

Hindwing : paler, brown only towards anal angle, where there are traces of a dark outer line.

Underside of forewing paler, of hindwing darker brown ; cell-spots and outer lines shown.

Head, thorax, and abdomen brown.

Expanse of wings : 32 mm.

1 ♀ from Suncha Corral, Santiago del Estero, Argentina (Steinbach).

NEW AFRICAN *THYRIDIDAE*, *URANIIDAE*, AND
GEOMETRIDAE.

By W. WARREN, M.A., F.E.S.

FAMILY *THYRIDIDAE*.

1. **Banisia discata** spec. nov.

Forewing: pinkish ochreous, crossed by deeper ochreous waved lines, a few of which are finely marked with black; these are an interrupted inner line, vertical at one-third; a median line forked at each end, and touching externally a small round black-edged spot at end of cell; a waved outer line running to anal angle, and a short subapical line; small black marginal spots beneath apex; fringe concolorous; the middle of costa is marked by four pairs of small white dots.

Hindwing: with a dark spot at end of cell and a smaller one in cell before it, the lines through them uniting on submedian fold in a black X-shaped marking.

Underside with all the markings more distinct.

Thorax and abdomen like wings; head and palpi externally browner.

Expanse of wings: 17 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

FAMILY *URANIIDAE*.

SUBFAMILY EPIPLEMINAE.

2. **Epiplema asinina** spec. nov.

Forewing: dirty grey, densely peppered with darker; costa at base blackish; lines dark brownish; first at one-third, strongly angled outwards on median vein; outer line from three-fifths of costa, outwardly convex to vein 4, then concave to two-thirds of inner margin, preceded by a diffuse darker shade, which at inner margin forms a blackish blotch; a submarginal streak of dark brown spots edged inwardly with black from apex to below middle; fringe brown, with the base paler.

Hindwing: with the lines as in forewing, but the outer line more acutely angled on vein 4, followed by a pale dark-edged line and preceded by a dark shade; an irregular dark submarginal cloud; a brown, inwardly black-edged, marginal shade from upper to below lower tooth, crossed below by three short white lines; a dark line on discocellular; fringe as in forewing.

Underside dingy brownish grey, dappled and striated with darker.

Face and palpi deep brown; vertex, thorax, and abdomen dark grey.

Expanse of wings: 23 mm.

1 ♂ from Natal.

A dull and inconspicuous insect.

Forewing with hindmargin simply curved: hindwing toothed at veins 4 and 7.

Antennae with distinct clavate teeth, ferruginous,

3 *Epiplema fumigera* spec. nov.

Forewing: white; a few small black dots along costa; first line curved, from one-fourth of costa to one-third of inner margin, but obscure and interrupted; outer line from about two-thirds of costa, oblique to vein 6 and very obscurely marked, then vertical to vein 3 and marked by black scales, thence oblique to two-thirds of inner margin, chestnut-brown; followed closely by a smoky brown shade, and a blackish grey erect submarginal band, rising from a black spot before anal angle; all three are interrupted and almost obsolete above vein 6; some dark scales before margin beyond cell, and black submarginal spots in upper half of wing; fringe white.

Hindwing: white, with a double somewhat bracket-shaped postmedian line, the inner arm darker, the outer brownish grey, followed by a smoky brownish-grey submarginal cloud, both stopping short at vein 2; dark grey lunules along hindmargin from upper to below lower tooth, the one beneath it with a black dot; fringe brownish grey, with white basal line; some black dots on costa, and traces of a basal line.

Underside white, with a black submarginal fascia, plain in forewing, hardly marked in hindwing; a grey tinge along costa of forewing at base.

Head, thorax, antennae, abdomen, and legs white; palpi above, a bar at top of face, and front of forelegs blackish.

Expanse of wings: 27 mm.

1 ♀ from Durban, Natal (G. F. Leigh).

Hindmargin of forewing entire; of hindwing toothed at 4 and 7.

Nearest to *E. ansorgei* Warr.

4. *Epiplema subdistincta* spec. nov.

Forewing: white; basal area very faintly fulvous-tinged, and with traces of three or four outwardly curved lines; outer line pale fulvous, double, from beyond middle of costa to two-thirds of inner margin, outcurved above and with a small indentation beyond cell, the inner arm with a black spot on it above vein 2; a fulvous submarginal shade, swollen at middle, and not reaching costa; fringe white, below the middle fulvous-tinged.

Hindwing: with a fulvous cell-spot and double fulvous outer line bluntly angled at vein 4, the inner arm, as in forewing, with a black spot above vein 2, the outer followed by a bright pale lustrous line swollen into a blotch at anal angle, and this again by a fulvous cloud reaching submarginal line at middle; submarginal line brown, indistinctly lunular, followed by a bright lustrous marginal line; fringe white, tinged at middle with fulvous; space between veins 3 and 4 somewhat fulvous.

Underside of forewing pale fulvous brown; inner margin and fringe white; hindwing white, with a dark spot at base of lower tooth.

Face, thorax, and abdomen white; dorsum with a grey tinge in middle; palpi dark at tips and externally.

Expanse of wings: 22 mm.

1 ♀ from Moyamba, Sierra Leone (D. Cator).

Hindmargin of forewing evenly curved; of hindwing with a small tooth at vein 4 only.

FAMILY GEOMETRIDAE.

SUBFAMILY OENOCHROMINAE.

Hypophracta gen. nov.

Structure and general appearance of *Conolophia* Warr.; neuration identical; inner margin of hindwing in ♂ without cone of hairs; but instead the fifth abdominal segment is swollen beneath so as to form a ridge with lateral projections, armed with short tufts of hair; the sixth segment beneath also bears a less conspicuous ring of hairs; the penultimate segment above has two lateral upcurved tufts; and the tufts of the anal segment are strongly developed; the hind legs of the ♂ have a long pencil of hair on the inner side of the tibiae, rising from the femoro-tibial joint.

Type: *Hypophracta persimilis* spec. nov.

5. **Hypophracta persimilis** spec. nov.

Forewing: bone-colour tinged with pale brownish red and sprinkled with fuscous atoms; the base and costal streak greyer; first line vertical, from one-fourth of costa to one-third of inner margin, marked by dark spots on the veins; cell-spot similar; outer line straight and oblique, dark brown, from below four-fifths of costa to two-thirds of inner margin, the central space preceding it paler, the marginal beyond it darker than the rest of the wing; submarginal line very obscure, marked (in the single example, which is not fresh) by a brown spot on costa and a second below vein 7; a row of distinct brown marginal spots between the veins; fringe bone-colour.

Hindwing: without first line; the dark transverse line central, not reaching above vein 6.

Underside paler, with numerous grey speckles; cell-spots and outer lines grey; submarginal spots as above.

Head, thorax, and abdomen bone-coloured; shoulders and base of patagia brownish; anal tufts fuscous; palpi black; underside of abdomen and legs bone-colour, grey-speckled; tibial tuft ochreous; lateral tuft of fifth segment internally blackish.

Expanse of wings: 52 mm.

1 ♂ from Kavirondo, British East Africa, April 1902.

Superficially scarcely distinguishable from *Conolophia conscutaria* Wlk.

SUBFAMILY ORTHOSTIXINAE.

GENUS **Derambila** Wlk., xxvi. p. 1630 (1862).

The genus was erected by Walker for a West African species, *punctisignata*, to which, if not, as I believe, identical, Butler's *Rambara puella* from Madagascar must be closely allied.

There seems to me no real structural difference between the African and Indian insects; and the name *Derambila* should stand for *Rambara* Moore, the generic term which was instituted to distinguish the Old World species from those of the American *Zanclopteryx*.

The genus *Chionopteryx* Snell., *Tijd. v. Ent.* 1873. p. 72, is probably only an extreme development, if that, of *Derambila*.

6. *Derambila costipunctata* spec. nov.

Forewing: silky white, semitransparent, the costa, as far as outer line, finely and evenly dotted with pale brown; lines ochreous, formed by diffuse confluent spots on the veins; first from below one-fourth of costa, incurved to near base of inner margin; outer line starting from a brown spot at three-fourths of costa, vertical and fine to vein 7, the spots on veins 5, 4, 3 evenly curved below it, but that on vein 6 displaced outwards, the rest of the line vertical from the base of vein 3; a submarginal curved line of semi-confluent ochreous spots; a marginal row of round black dots between veins; fringe white; cell-spot large, brown, formed of two confluent horizontal streaks.

Hindwing: with the outer line outcurved at middle; the submarginal line and marginal spots as in forewing; no cell-spot.

Underside white, with the dark spot of forewing showing through.

Head, thorax, and abdomen all white; palpi white, with the tips of each segment ringed with black; second and third segments of abdomen ringed with brown; foretibiae brown in front, the legs otherwise white.

Expanse of wings: 27 mm.

1 ♂ from Moyamba, Sierra Leone, April 1903 (Cator).

This must be near to *Rambara thearia* Swinh., but that species has the frous brown, and a brown discal spot in hindwing; and no submarginal bands are mentioned.

7. *Leptaletis variabilis* ab. *amplifiava* nov.

Differs considerably from typical *variabilis* Butler, and may be a distinct form.

Forewing: yellow for two-thirds, the apical third black; in the outer half of the yellow area are two large irregular white blotches, edged with black; the upper one occupying outer half of cell, forming a long oval, bisected longitudinally by the black fold, and diffusely black-edged basewards; the lower broader, extending from vein 3 to 1, below which it is thickly black-edged, crossed by the fold and vein 2, which are thickened with black basewards, and give that side of the blotch a trilobed appearance; in the black apical third are two large confluent white blotches between veins 4 and 8, and two smaller separate blotches towards margin on each side of vein 3.

Hindwing: yellow; the end of cell white edged outwardly with black; the black marginal band with the white oval blotches runs from anal angle to vein 3, where the black intervals become wedge-shaped and the white coloration runs up, also wedge-shaped and edged with black, between the veins nearly to end of cell: apex of wing black, preceded in the yellow subcostal space by an elongated white patch edged with blackish.

Underside the same, but the markings confused and without distinct edging.

Head, thorax, and abdomen black and white, abdomen below yellow.

Expanse of wings: 60 mm.

1 ♀ from Entebbe, Uganda, July 1898 (Capt. Rattray).

8. *Mimaletis albipennis* spec. nov.

Forewing: white; costal margin above subcostal vein black, with a streak of grey scales below costal edge to near middle; apical half of wing black, the inner edge ill-defined, running from below middle of costa, faintly curved, to inner

margin before anal angle : in it are three white blotches, one oval and oblique, from the base of vein 7 to below middle of vein 5, the other two rounded, submarginal, one on each side of vein 3 : fringe black.

Hindwing : white, with black marginal border, containing five white horseshoe-shaped blotches between the veins, those beyond cell and in submedian space smaller, the former partially, the latter wholly divided : fringe black.

Underside the same.

Palpi whitish, with the terminal segment black : face white, with a black spot above ; vertex white, with a black spot in middle ; shoulders black, with white tips : patagia black, with apical half yellow ; thorax white marked with black : abdomen white, with two rows of dorsal black spots, a lateral row, and a double row underneath ; legs whitish, blackish in front, the tarsi yellowish.

Expanse of wings : 52 mm.

1 ♀ from Moyamba, Sierra Leone (Cator).

SUBFAMILY GEOMETRINAE.

9. *Agraptochlora analiplaga* spec. nov.

Forewing : green, covered with pale vermiculations ; costa yellowish, marked with black-brown striae towards base ; a slight pinkish brown mark on discocellular ; a dark brown blotch from anal angle directed towards cell-spot, and reaching vein 2 ; fringe yellowish, beyond an ill-defined dark marginal line.

Hindwing : without the anal blotch, but with a brown streak along middle of inner margin.

Underside whitish green, without markings.

Face and palpi ochreous beneath ; palpi externally deep red ; upper part of face and vertex deep red ; thorax and basal segment of abdomen green ; rest of abdomen ochreous, the dorsum sprinkled with brown, the crests dark brown ; antennal shaft dark brown.

Expanse of wings : 40 mm.

1 ♀ from Massasi, German East Africa.

10. *Antharmostes interalbicans* Warr.

The species was described by me originally from a ♂ from Yakusu, Upper Congo, *Noc. Zool.* ix. p. 193 (1902). Two other examples, both ♂♂, have arrived since, in which the parts of the head and body are in better condition than in the type ; and it seems advisable to make the following corrections. The head and palpi are not black-brown, but the face is black, and the palpi brown-red above, pale below ; secondly, the dorsal surface of the abdomen is marked on each segment, except the basal one, by red-brown spots with pale centres.

Both examples from Bopoto, Upper Congo, dated June 1901 and December 1902 (Rev. K. Smith).

11. *Eucrostes undulilinea* spec. nov.

Forewing : bright green : costal edge white ; cell-spot small and dark ; two very fine white cross-lines ; first from one-fourth of costa to one-third of inner margin, outcurved above and below median vein ; outer line from three-fourths of costa to anal angle, projecting angularly on vein 6 and broadly and bluntly

between 2 and 4, and forming a sinus basewards on both folds ; fringe pale green ; white marginal spots at end of veins.

Hindwing : with slight brown cell-spot and white marginal spots, but no line.

Underside pale green ; forewing with brown cell-spot and yellowish costa.

Head and thorax green ; abdomen (greased) whitish ; antennae white with grey speckling ; legs white ; foretibiae in front marked with fuscous, foretarsi with bright brown.

Expanse of wings : 17 mm.

1 ♂ from Moyamba, Sierra Leone, March 1903 (Cator).

The unusual course and shape of the outer line will distinguish the species.

12. *Hypocoela uniformis* spec. nov.

Like *H. subfulvida* Warr. from West Africa, but the underside of both wings is uniformly green like the upperside, with no shade of fulvous whatever ; the outer line of forewing and median of hindwing is simply a darker shade of green than the ground-colour, not brown, and the fringe of both wings is dark brown like the marginal shades : the hindwing beneath has a broad fuscous submarginal fascia, as on upperside.

Expanse of wings : 40 mm.

1 ♀ from Entebbe, Uganda, May 1900 (Capt. Rattray).

13. *Microloxia roseata* spec. nov.

Forewing : delicate pale green, the base and costal area pale pink ; fringe green, pink towards apex.

Hindwing : pale pink, greenish only along inner margin.

Underside of forewing bright pink, greenish along inner margin ; of hindwing greenish flushed with pink.

Head, antennae, thorax, and legs pink ; abdomen greenish white ; face pure white ; pectus and forelegs bright pink.

Expanse of wings : 17 mm.

1 ♂ from the foot of Nieuwveld Mts., five miles N.W. of Beaufort West (Butt).

14. *Phorodesma rubrimaculata* spec. nov.

Forewing : deep green shagreened throughout with pale ; the costa, except at extreme base, deep red dotted with blackish ; cell-spot diffuse, vinous, red with a black centre ; two large marginal blotches vinous-red edged with blackish ; one from vein 7 to below vein 5, bilunate ; the other at anal angle much larger ; fringe pale green, tinged with vinous, almost wholly vinous beyond the red blotches, and deeper beyond the vein-ends.

Hindwing : with the cell-spot larger, the blotch on each side of vein 5 smaller ; the anal angle of both hindwings is broken off, but, judging from analogy, a small red blotch there also may be surmised ; inner margin with a red streak.

Underside whitish green, the costal edge of forewing reddish ; fringe green, tipped with red.

Antennae, vertex, upper half of face, palpi above, and front of forelegs deep red ; lower half of face and palpi beneath greenish white ; thorax and abdomen pale green ; two basal segments of dorsum red, the rest blackish, with slight crests ; legs and abdomen beneath shining greenish white.

Expanse of wings : 36 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

The costa of forewing has a short sharp shoulder at base : the pectinations of the antennae are decidedly longer on the outer row than on the inner.

Rhodesia gen. nov.

Forewing : ample ; costa somewhat curved ; hindmargin convex ; anal angle well marked.

Hindwing : broad ; hindmargin well rounded ; anal angle squared.

Antennae of ♂ bipectinate ; of ♀ thick, subserrate beneath ; palpi well developed, the third segment as long as second, decumbent, spatulate ; tongue slight ; thorax and abdomen stoutly built.

Nervation : forewing, cell nearly half as long as wing ; discocellular vertical in upper third, then concave ; first median nervule at three-fourths, second close before third ; lower radial from upper third of discocellular, upper stalked with 10, 7, 8, 9 ; 11 anastomosing with 12 ; hindwing, costal and subcostal anastomosing for some little distance ; 6, 7 stalked ; discocellular oblique, radial from upper third ; medians as in forewing.

Type : *Rhodesia viridalbata* spec. nov.

Comibaena alboridata Saalm. also belongs here.

15. Rhodesia viridalbata spec. nov.

Forewing : deep green ; costa chalk-white, speckled with fuscous and reddish scales, the edge remaining pure white ; lines and markings white ; first line from one-fourth of costa to one-third of inner margin, waved, roundly projecting outwards above and below median vein and again below submedian ; below the middle preceded by white scaling, which forms a grey speckled blotch on inner margin ; outer line concisely lunulate-dentate from nearly three-fourths of costa to two-thirds of inner margin ; submarginal line represented by two white blotches with angled edges, one beyond cell, the other at anal angle, both sprinkled with dark scales ; a pale dash on vein 3 between them ; a marginal series of large white triangular spots at the vein-ends, laterally confluent above the middle ; a black marginal line interrupted at the veins ; fringe white, with grey mottlings beyond veins ; discocellular marked by a white spot at each end, the lower the plainer, tending to form a fine line.

Hindwing : the same, but the inner line represented by a white band, broadening to middle of inner margin and marked with dark scales.

Underside whitish green ; costa and marginal line of forewing greyish.

Palpi and forelegs red above, whitish underneath ; face, thorax, and basal segment of abdomen green ; vertex and antennae snow-white ; abdomen white, thickly speckled with pink and grey scales on dorsum.

Expanse of wings : 28 mm.

1 ♀ from Durban, Natal (G. F. Leigh).

16. Rhomborista intermaculata spec. nov.

Forewing : grass-green, thickly rippled with whitish ; costal area above subcostal vein brown varied with paler, and along the costal edge snow-white, close to the base red ; marginal line brown, thickened into triangles at the vein-ends, each marked with some blue-grey scales at the centre ; from the anal

angle a small conical brown mark, pointing towards cell-spot, extends to the submedian fold ; cell-spot pyriform, the broad end below, brown with some blue-grey scales at centre ; from vein 4 to below vein 2 an irregularly-edged oval brown blotch, parallel to hindmargin ; fringe white, with brown chequering beyond veins.

Hindwing : with cell-spot like that of forewing, but larger ; the swollen spaces at ends of veins diamond-shaped, filled with blue-grey scales, larger at apex and decreasing to anal angle, where there is a small brown blotch ; fringe as in forewings. In both wings the brown markings are slightly mixed with red scales, especially along their edges.

Underside glossy whitish green ; marginal line and cell-spots brown ; costa pale with brown freckling, the brown blotch of forewing slightly showing through.

Face, palpi externally, collar, and front of forelegs red ; vertex and antennal shaft snow-white ; patagia green ; thorax and abdomen greenish white, apparently with darker green dorsal spots.

Expanse of wings : 38 mm.

1 ♀ from Casamance, Senegambia (Laglaize).

In *Heterorachis rubella* Warr., which has, like this insect, an oval brown spot across the median nervules, the hindmargin is regularly curved.

17. *Victoria fuscithorax* spec. nov.

Forewing : banded alternately white and green, the green bands themselves also broken up by transverse white striae ; base narrowly white, succeeded by a curved band of green, followed by an equally broad one of white, marked at middle by three brown dots on the veins ; central fascia broad at costa, very narrow at inner margin, its outer edge sinuate, containing a large oval white cell-mark, with a dull brick-red spot in middle ; the white band following is like the central fascia inverted, narrow at costa and very broad at inner margin, marked by a series of brown dots on veins ; a green marginal border, ending in a point at anal angle, and with the portion above vein 6 displaced basewards, leaving the apex squarely white ; a dark lunulate marginal line swollen into black crescents between veins 7 and 4 and between veins 1 and 2, fringe dark grey with whitish base, wholly white at apex and between veins 3 and 4.

Hindwing : green striated with white, the base and an ill-defined postmedian band white, this last with a series of dark vein-spots ; marginal line and fringe as in forewing.

Underside white, with dark marginal lunules beyond the cells ; the green markings of upperside only showing through.

Head, thorax, and metathoracic tuft dark fuscous-grey ; patagia green internally, white externally ; abdomen whitish, with thick fuscous-grey dorsal crests ; antennae ferruginous, with the shaft fuscous and a fuscous tuft at base ; palpi blackish, with the terminal segment whitish ; legs internally white, brown in front.

Expanse of wings : 48 mm.

1 ♀ from Entebbe, Uganda, March 1902 (Captain Rattray).

SUBFAMILY STERRIINAE.

18. *Cosymbia? nitidata* spec. nov.

Forewing : glossy, greyish flesh-colour, with very indistinct markings ; a curved grey line, vertical from one-fourth of costa to one-third of inner margin ;

a sinuous grey outer line from five-sixths of costa to four-fifths of inner margin, oblique outwards to vein 7, vertical to 6, deeply and squarely indented between 6 and 4, then dentate-lunulate and oblique; the space immediately before it is without any grey dusting, and is edged internally by a line running parallel to the outer line and forming the edge of the central grey-tinged area; cell-spot dark; marginal area grey-tinged, and containing a slight dark blotch at anal angle; fringe pale flesh-colour, very glossy.

Hindwing: rather paler, with cell-spot and traces of a waved outer line.

Underside glossy, without markings.

Face, palpi, and forelegs red; vertex and antennae white; thorax and abdomen flesh-colour.

Expanse of wings: 34 mm.

1 ♀ from Durban, Natal (G. F. Leigh).

This may possibly be Walker's *Ephyra testaceata*, the type of which in the British Museum is a mutilated fragment.

19. *Craspedia immaculata* spec. nov.

Forewing: cream-colour, finely speckled with dark atoms; the lines ochreous; the first obscure, curved, marked, in fresh examples, by a dark dot on subcostal vein, which easily disappears; median strongly excurved round the ochreous-grey cell-spot; the outer lunulate-dentate, followed by the usual two submarginal shades, enclosing the pale submarginal line; the extreme hindmargin also pale; black marginal spots between the veins and small black dots beyond them at the base of the cream-coloured fringe.

Hindwing: like forewing, but without basal line.

Underside cream-colour, glossy, unspeckled; forewing suffused with grey to median line; this line, the strongly dentate outer line, the marginal line, and the veins in outer half of wing dark grey; the first submarginal shade and cell-spot also expressed; the dots at base of fringe visible; hindwing with outer line below costa and the marginal spots only.

Thorax and abdomen like wings: collar ochreous; vertex pale; face dark brown above, paler brown below, white across the middle.

Expanse of wings: 30 mm.

2 ♂♂ from Bouma, Ivory Coast, March 1903 (Pemberton).

This species belongs to Hübner's genus *Craspedia* as typified by *C. ornata*, in which the hindmargin of hindwings is produced at veins 4 and 6 with a sinus between; it lacks the dark thickened marks which follow the outer line in the typical species.

20. *Emmiltis bisinuata* spec. nov.

Forewing: bone-colour, finely dusted with reddish; the veins towards hindmargin finely reddish; the lines sharply marked, dark reddish; first at one-fourth of costa to one-third of inner margin, outcurved; second and third sinuous, exactly parallel to each other, at two-thirds and five-sixths, both incurved on the two folds; a fine black marginal line swollen between the veins, separated by a fine pale space from a diffuse reddish lunulate marginal line; cell-spot black, conspicuous; fringe concolorous.

Hindwing: more thickly dusted; median line touching the black cell-spot; outer line and margin as in forewing.

Underside similar, but the outer line more marked.

Face and palpi dark red-brown, head parts broken ; thorax and abdomen like wings.

Expanse of wings : 26 mm.

1 ♂, Bange Ngola, Angola, October 1903 (Dr. Ansorge).

Close to *E. sinuaria* Swinh., but distinct.

21. *Emmiltis cervinata* spec. nov.

Forewing : pale fawn-colour, faintly tinged with reddish, especially along costa and median line : first line curved, very indistinct, but marked by black dots on the veins ; median shade cloudy and diffuse, from three-fifths of costa to middle of inner margin, passing outside a blackish cell-spot ; outer line distinct, blackish, lunulate-dentate, at three-fourths ; submarginal line waved, between two narrow darker shades ; marginal spots large and black ; fringe fawn-colour.

Hindwing : like forewing, but without inner line.

Underside paler and clearer ; the outer line distinct, the rest indicated.

Head, thorax, and abdomen fawn-colour ; face and palpi black.

Expanse of wings : 24 mm.

2 ♀ ♀ from Moyamba, S. Leone, May 1903 (Cator).

22. *Emmiltis khakiata* spec. nov.

Forewing : greyish cork-colour ; the lines slightly darker grey ; basal line very obscure ; median shade diffuse, oblique from before middle of inner margin towards four-fifths of costa ; outer line from three-fourths of inner margin towards costa before apex, marked darker on veins ; submarginal line between two darker shades converging towards apex ; cell-spot small, blackish ; marginal dots minute ; fringe concolorous.

Hindwing : the same, but without basal line.

Underside grey, smooth ; the outer lines and cell-spot slightly indicated ; fringe paler.

Face and palpi dark brown ; vertex, thorax, and abdomen concolorous with wings ; abdomen ringed with grey.

Expanse of wings : 25 mm.

Several examples from Durban, Natal (G. F. Leigh).

Lipocentris gen. nov.

The neurulation is that of *Emmiltis* Hüb., veins 6 and 7 of the hindwings not stalked ; but the hindlegs of the ♂ are fully developed, yet without spurs ; the palpi are thick, porrect downwards, the terminal segment very small ; the hindwing has the hindmargin decidedly elbowed in the middle, and there slightly toothed ; antennae (♂) subserrate, ciliated.

Type : *Lipocentris rubriceps* spec. nov.

23. *Lipocentris rubriceps* spec. nov.

Forewing : greyish ochreous, with a slight rusty tinge, and densely but finely dusted with dark atoms, except in the space between median and outer lines ; a very

faint grey curved inner line at one-third; a cloudy sinuous grey median shade from two-thirds of costa to middle of inner margin, near the outer edge of which is the distinct blackish cell-spot; outer line distinct, marked by black teeth on the veins, from four-fifths of costa to two-thirds of inner margin, angled outwards on vein 6, then oblique and faintly sinuous; two dark grey submarginal shades containing the pale submarginal line, both cut short at vein 6; elongated black marks between veins along the hindmargin; fringe concolorous, with fine dark dusting.

Hindwing: similar, without first line; the basal area thickly dusted with blackish; the cell-spot large and black; the submarginal shades complete.

Underside darker, the dusting denser.

Face, palpi, and front of forelegs deep red; vertex snow-white; collar and shoulders ochraceous; thorax and abdomen like wings.

Expanse of wings: 22 mm.

1 ♂ from Cunene, Angola, February 1902 (Pemberton).

24. *Somatina nucleata* spec. nov.

Forewing: greenish pearl-grey, with faint pale strigulations; lines very indistinct; a basal shade, slightly darker, curved from one-fourth of costa to one-third of inner margin; a median shade, projecting beyond cell and incurved below middle; outer shade dentate-lunulate, more distinct, nearly vertical at four-fifths; a very faint paler submarginal line; a dark slate-coloured marginal line interrupted at the veins; fringe pale, greenish grey; cell-spot oval, dark brown, with ochreous scales in middle and ringed with white.

Hindwing: with cell-spot twice as large.

Underside glossy, greenish white, with the outer line grey and distinct, and with dark grey marginal lunules; costa of forewing yellowish.

Face, palpi, and collar dark brown; vertex and antennae white; thorax and abdomen like wings; forelegs red in front.

Expanse of wings: 36 mm.

1 ♀ from Moyamba, S. Leone, March 1903 (Cator).

Distinguished at once by the peculiar shade of colour.

25. *Somatina rufitacta* spec. nov.

Forewing: cream-coloured, thickly sprinkled with dark atoms; the two lines very fine, marked only by blackish dots on the veins; first from one-fifth of costa to one-fourth of inner margin, curved; outer from fully two-thirds of costa to three-fourths of inner margin, oblique outward to vein 6, then dentate-lunulate; a very obscure median shade; both lines and shade start from oblique rufous costal streaks; cell-mark rufous-olive edged with dark brown, erect, occupying the whole length of discocellular, the outer edge trilobed; marginal area rufous, with a waved grey submarginal line through it; marginal lunules rufous, darker above; fringe grey, thickly dusted with blackish atoms, with dark spots beyond the end of veins, and a pale line at base.

Hindwing: similar, but without basal line, and the cell-mark represented by a linear red mark on discocellular.

Underside cream-colour, faintly grey-speckled; costa of forewing and tips of fringe rufous; outer line, marginal lunules, and fringe specks dark.

Face, palpi, and forelegs deep red-brown above, pale below : vertex, thorax, and abdomen like wings.

Expanse of wings : 36 mm.

1 ♀ from Durban, Natal, July 1902 (K. Thoru).

Nearest to *S. figurata* Warr.

26. *Sterrha irrufata* spec. nov.

Forewing : dark terra-cotta, densely sprinkled with black scales ; lines black, all irregularly dentate-sinuate, starting at even distances from each other, the inner and outer rather nearer the median than the base and hindmargin respectively ; submarginal line of the ground-colour, irregularly waved ; a row of black dashes between the veins close before hindmargin on a narrow terminal band of ground-colour ; fringe blackish ; cell-spot black, sometimes obscured.

Hindwing : similar, but without basal line.

Underside fuscous, without markings ; costa of forewing paler.

Face and palpi black ; vertex ochraceous ; thorax and abdomen like wings, the segments of abdomen with paler rings.

Expanse of wings : 18 mm.

4 ♂♂ from the foot of the Nieuwveld Mts., 5 miles N.W. of Beaufort West (Miss Butt).

Distinguished by the peculiar shade of ground-colour and dark underside ; superficially the insect is much like *Sterrha hispida* Warr. from Angola and *Emmittis inscriptata* Wlk.

27. *Synelys lubricata* spec. nov.

Forewing : bone-colour, somewhat iridescent, and with a very faint ochreous grey tinge ; cell-spot black ; marginal dots very finely black ; the usual five oblique transverse lines are faintly visible in certain lights ; only the outer line is always evident, from three-fourths of costa to two-thirds of inner margin, greyish and lunulate-dentate, most marked on inner margin ; fringe concolorous.

Hindwing : with four lines only.

Underside paler ; with cell-spots and outer line only marked.

Face and palpi black ; vertex white ; thorax and abdomen like wings.

Expanse of wings : 23 mm.

1 ♂ from Bange Ngola, Angola, October 1903 (Dr. Ansorge).

The forewing is elongate with prominent apex ; the hindwing has only a blunt angle at the middle.

SUBFAMILY HYDRIOMENINAE.

28. *Ochyria discata* spec. nov.

Forewing : brownish grey ; the lines very fine ; basal patch small, limited and crossed by curved black lines ; inner edge of central fascia at one-third, sharply angled on subcostal vein, then oblique and slightly wavy, preceded on costa by a small pale spot ; outer edge at two-thirds, blacker and thicker, followed by a pale spot, limited by a fine whitish line, strongly outcurved above and below cell

insinuate between, preceded by two fine parallel waved brown lines ; the innermost lines coalesce in the centre to form a narrow oblong curved blackish patch from costa to median vein and a dark spot on submedian fold ; submarginal line indistinct, forming whitish lunules ; a dark triangular patch on outer margin limited above by an oblique line from apex ; an interrupted black marginal line ; fringe concolorous, the base darker.

Hindwing : paler, especially along costal half, with all the lines, except the basal, repeated ; the central fascia without any dark markings.

Underside much darker ; the cell-spots and all three lines blackish.

Head, thorax, and abdomen brownish grey ; the last with dark segmental rings.

Expanse of wings : 19 mm.

1 ♂ from Lower Umkomaas, Natal (G. F. Leigh).

Hindmargin of hindwing sinuate, much as in *Ochyria inconspicua* Warr. from India, which it greatly resembles.

SUBFAMILY TEPHROCLYSTIINAE.

29. *Tephroclystia atomaria* Warr.

This species was described from a ♂ only, in *Nor. Zool.* ix. p. 510 (1902), from British E. Africa.

The ♀ is somewhat larger, with the ground-colour, both of body and wings, decidedly whiter, and the markings more distinct ; on the costa are four dark blotches, from which rise four grey bands, the first limiting the basal area, the next two forming the outside bands of the central fascia, and the last immediately preceding the submarginal line. The hindwing is uniform pale grey throughout.

This ♀ came along with an ordinary ♂ from Deimba, Ivory Coast, Feb. 1903 (Pemberton).

SUBFAMILY PALYADINAE.

30. *Ochroplutodes crocea* spec. nov.

Forewing : glossy pale yellow, towards base and along costa somewhat shiny ; sparsely sprinkled with red-brown dots, but without any markings ; on costa before apex a square red-brown blotch ; two coalescent lunulate blotches between veins 2 and 4, and a spot at middle of inner margin ; these brown blotches are placed as if they might be on the margin of a sinuous line, such as occurs in *O. sordida* ; fringe concolorous.

Hindwing : with the dots arranged bandlike before the middle, with a slight blotch at the origin of veins 6, 7.

Underside paler yellow, with only the double blotch of forewing marked.

Head, thorax, and abdomen concolorous ; fillet and antennae white.

Expanse of wings : 32 mm.

2 ♀♀ from Durban, Natal (G. F. Leigh), probably bred.

It is possible, though scarcely probable, that this may be a ♀ of *O. sordida* described by me as doubtfully African—cf. *Nor. Zool.* ii. p. 120 (1895). Since that description was published I have seen several examples, all ♂♂, from Northdene, Natal ; but the present insect seems totally distinct.

SUBFAMILY DEILINIINAE.

31. *Neostega flavata* spec. nov.

Forewing : bright pale yellow, sprinkled with ferruginous, and crossed by ill-defined ferruginous lines ; an inner, median, and outer, all slightly curved, at even intervals ; within the median a ferruginous cell-spot ; the submarginal band is much broader and conspicuous, formed of ferruginous striae, darkened by a brown tinge ; fringe like wing ; no marginal line ; the median shade starts from a dark costal spot.

Hindwing : similar, the lines very indefinite.

Underside without speckling ; the median and submarginal bands only distinct.

Head, thorax, and abdomen yellowish varied with ferruginous.

Expanse of wings : 16 mm.

1 ♀ from Degama, Niger R., February 1902 (Dr. Ansorge).

The species agrees with the type of the genus in the shortness of the cells and in the anastomosis of the costal and subcostal of hindwing ; but the venation of forewing differs ; veins 10, 11 are coincident and free throughout ; in *N. flaviguttata* these are stalked with 7, 8, 9, and anastomose with 12.

32. *Neostega obscurata* spec. nov.

Forewing : fuscous, darker beyond outer line, and with obscure deeper fuscous striae ; first line indistinct, from one-fourth of costa to one-third of inner margin ; outer from two-thirds of costa to two-thirds of inner margin, curved below costa, then parallel to margin ; both lines dark fuscous, like the cell-spot ; fringe concolorous.

Hindwing : with outer line only, straight ; cell-spot distinct.

Underside paler, browner, without lines, but the border distinctly darker than the basal half of wing.

Vertex, thorax, and abdomen concolorous with wings ; face and palpi dark brown ; fillet and base of antennae snow-white.

Expanse of wings : 30 mm.

1 ♂ from Kassai River, Congo Free State.

Agrees with *Neostega* in vein 5 of forewing rising from above middle of discocellular, but the coincident veins 10 and 11 are not stalked with 7, 8, 9, but rise just in front of them. The antennae have sessile fascicles of cilia.

Pycnostega obscura Warr., which resembles it at first sight, has pectinated antennae.

Pycnostega gen. nov.

Forewing : costa straight ; apex bluntly rounded ; hindmargin curved.

Hindwing : ample ; hindmargin curved ; anal angle rectangular.

Antennae of ♂ plumose, the apical fourth simple. Palpi upcurved in front of face, short, not reaching vertex ; tongue and frenulum present ; legs rather short and stout ; hindtibiae with four short spurs.

Neuration : forewing, cell only two-fifths of wing ; discocellular vertical, curved below ; first median nervule at two-thirds, second shortly before end ; radials normal ; 7, 8, 9, stalked ; 10 and 11 coincident ; hindwing, cell two-fifths of wing ; 7 from before angle of cell ; no radial.

Forewing with fovea. Scaling fine and close, submetallic.

Type: *Pycnostega obscura* spec. nov.

The genus is allied to *Neostega* Warr., but that genus has ciliated antennae.

33. *Pycnostega obscura* spec. nov.

Forewing: dull dark brown; the only marking visible is the outer line, which is fine and deeper brown, running parallel to hindmargin, twice sharply waved below costa between veins 8 and 6, then sinuous; between veins 6 and 8 it passes through a patch of dull pale scales; fringe concolorous; costal edge finely dotted with yellow, ochreous.

Hindwing: with the line central, the basal half darker than the outer.

Underside dull greyish brown; the fringe dark brown; cell-spots visible.

Head, thorax, and abdomen concolorous with wings; vertex and shaft of antennae snow-white.

Expanse of wings: 29 mm.

1 ♂ from Degama, Niger River (Dr. Ansorge).

SUBFAMILY ABRAXINAE.

34. *Negla tenuiorata* Wlk.

Walker's species from Ashanti (also from S. Leone) is comparatively small and white, expanding 40—44 mm., with the inner and outer lines composed of small round spots, and with the marginal border of hindwing slight and irregular.

It has been usual to sink *nachtigali* Dewitz to Walker's species; but I much doubt if this is right: it is at least a good dark local form; I have a series before me of 13 ♂♂, from Cahoca, Angola, collected by Dr. Ansorge, which agree well with Dewitz's figure; these expand 52 mm., and have the outer two-thirds of the wings mainly black, the wings being crossed by a broad black postmedian fascia obliterating the outer series of spots, and leaving only a small pale space above inner margin before the dark border. Mabille's *melanthiata* represents an intermediate form, as large as *nachtigali*, but with almost as much white in both wings as in *tenuiorata*, but the whole ground is yellower, and the series of spots large and round; the hindwings have a border of large horseshoe-shaped spots between the veins, which is distinctive.

35. *Rhodophthitus procellosa* spec. nov.

Forewing: white, covered with long slender black striae, which towards apex and hind margin become thicker and partially confluent; fringe blackish.

Hindwing: flushed with yellow, with a broad smoky black marginal border, the outer portion of the paler area with some short thick striae; fringe black, along inner margin yellowish.

Underside the same.

Face yellowish white below, velvety black above and at sides, with a pale spot beneath each antenna; shoulders and patagia ochreous, tipped with rosy; thorax dark; abdomen yellow with black spots which become confluent on basal segments; antennae black; legs fuscous; tinged inside, like the pectus, with rosy.

Expanse of wings: 44 mm.

1 ♂ from Samba Acenda, Angola, October 1903 (Dr. Ansorge).

SUBFAMILY BRACCHINAE.

36. *Hylemera subfulva* spec. nov.

Forewing : creamy white ; the edge of the white portion starting from near base of inner margin, running parallel to the costa to middle of wing, then curving to inner margin before anal angle, the costal and marginal areas black, except a small oblique oval spot of white lying between veins 6 and 4 ; fringe black.

Hindwing : with only the hindmargin black, the inner edge slightly curved outwards below apex ; a small black mark at extreme base.

Underside like upper ; but the base of costa of forewing for one-fourth, and of hindwing at extreme base only, fulvous.

Head, antennae, thorax, a belt across basal segment of abdomen, and the anal segment black ; rest of abdomen and tips of metathorax white ; abdomen beneath and legs whitish, the latter fuscous in front.

Expanse of wings : 35 mm.

1 ♂ from Moyamba, Sierra Leone, April 1903 (Cator).

Distinguished from its nearest allies, *circumdatus* Wlk., *renifera* Warr., and *wardi* Sharpe, by the evenly curved edge of the white area of the wings.

SUBFAMILY BISTONINAE.

37. *Ephemerophila penumbrata* spec. nov.

Forewing : bone-colour washed with brownish grey and freckled with fuscous ; the costa without grey suffusion, marked with dark triangular blotches at the commencement of the lines, at one-fourth, one-half, three-fourths, and shortly before apex ; the lines very oblique and in their upper half obscure ; all running out obliquely and bluntly bent in cell and beyond ; the first, bent shortly before the cell-spot, reaching inner margin at one-fourth ; the median, bent well beyond cell at two-thirds, reaching inner margin at one-third : the outer bent towards hindmargin, forming three finely marked blunt teeth between veins 7 and 4, reaching inner margin before one-half close to median line ; followed by two brownish lines which also form teeth beyond those of the outer line, which are all more or less hidden by a brown triangular shade from below apex to vein 5 ; submarginal line not marked above, but appearing below middle from vein 4 to close before anal angle, the marginal area beyond it dark fuscous ; marginal dark spots between veins above middle and black lunules below it ; fringe brown-grey above middle, fuscous below.

Hindwing : with a blackish spot at base continuing the inner line of forewing ; a double straight antemedian line with darker scaling round it ; an oblique narrow brown cell-spot ; a double straight postmedian line, the inner arm fine and dark ; submarginal line from apex to above anal angle, inwardly preceded by a thick deep brown-black shade and with the marginal area beyond it dark fuscous ; black marginal lunules ; fringe brownish fuscous.

Underside suffused, except along costa of forewing, with flesh-coloured brownish, and coarsely black-speckled ; cell-spots large and blackish ; all the lines and dark shades of upperside still plainer, with an additional curved outer line of dark spots on the veins.

Thorax and abdomen brownish ochreous with dark speckling, like the wings ; face and palpi browner.

Expanse of wings : 52 mm.

1 ♀ from Moyamba, S. Leone (D. Cator).

38. *Haggardia spissata* spec. nov.

Forewing : covered with dense, rough, grey and fuscous scales, obliterating the pale ground-colour; costa ochreous with short black striae; the lines black, thickened on the veins; first at one-third, oblique to median, then vertical; outer from three-fourths of costa, incurved to vein 4 below the black cell-spot, thence parallel to first line; a very indistinct dentate submarginal line, denoted by whitish scales; fringe concolorous, faintly dark-mottled; veins towards margin rust-coloured.

Hindwing : somewhat paler towards costa; no inner line.

Underside whitish, thickly grey-speckled; costa of forewing ochreous with dark striae; cell-spots distinct; outer line faint; fringe dark.

Head and thorax dark grey; abdomen lighter grey, with a black band at base; pectus and legs dark grey.

Expanse of wings : 44 mm.

1 ♂ from Stanger, Natal (J. Delvin).

Pectus and palpi woolly.

39. *Haggardia subalbata* spec. nov.

Forewing : wood-brown, densely striated with black, the cell and basal area almost becoming black, and a broad marginal border actually black: the cell-spot and two transverse lines deep black; first line from one-fourth of costa to one-fourth of inner margin strongly excurved above and below median vein; the outer from two-thirds of costa to middle of inner margin, slightly dentate outwards on the veins, sinuous inwards, with one deep sinus in submedian interval, where it approximates closely to first line; before the dark marginal border a lunulate paler submarginal band, limiting outwardly a broad area of the ground-colour; this is sometimes very ill-defined; fringe brown, chequered with blackish beyond veins.

Hindwing : with the two dark lines fine and indistinct; a black cell-spot; the rest as in forewing.

Underside dull pearl-grey, thickly dusted with black; the costa of forewing ochreous; black cell-spot and traces of outer line; fringe brown-grey.

Head, shoulders, and pectus dark grey; thorax and patagia blackish; abdomen brown, thickly black-speckled; legs grey speckled with black.

Expanse of wings : 40 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

I have seen another example, also a ♂, from the Transkei, much larger and more distinctly marked.

40. *Hirasodes denticulata*.

Hirasa denticulata Warr., *Nor. Zool.* xi. p. 473, ♀ (1904).

A ♂ from the same locality as the ♀♀ already seen—Natal—has strongly pectinated antennae, and the species must be placed under *Hirasodes* Warr.

The ♂ is pinkish brown in coloration, and expands only 30 mm.; the lines are more distinctly marked than in the ♀.

Omphalucha gen. nov.

Forewing : elongate-triangular; costa straight, slightly inflexed in middle; apex blunt; hindmargin obliquely curved, crenulate.

Hindwing : with hindmargin strongly crenulate ; inner margin short.

Abdomen stout ; in the ♂ with the anal tufts squarely cut off and spreading.

Antennae of ♂ bipectinate to apex, the pectinations stiff, nearly vertical to the shaft ; forehead flat ; palpi stout, short, terminal segment small ; tongue absent ; frenulum strong ; pectus and femora woolly ; legs short and stout ; hindtibiae of ♂ swollen, with four stout spurs. Forewing with a raised circular fovea.

Neuration : forewing, cell three-fifths of wing ; discocellular vertical above, oblique below ; first median nervule at five-eighths, second close before third ; radials normal, the subcostal vein depressed at extremity ; veins 7, 8, 9 stalked from the bend ; 10, 11 short-stalked in the ♂, coincident in the ♀ ; hindwing, with costal and subcostal closely approximated for more than half the length of cell ; veins 3 and 7 each just before angle of cell ; no radial.

Type : *Omphalucha hirta* spec. nov.

41. *Omphalucha ambusta*.

Philopota ambusta Warr., Nov. Zool. xi. p. 472. ♀ (1901).

Since describing the type ♀ of this species, I have seen a series of 12 ♂♂ and 1 ♀ collected by Dr. Ansoerge in September 1903 at Muhumbua, between the rivers Cambo and Cugho, in Angola. The ♂♂ possess the fovea in forewing, and the antennae with vertical pectinations, as in *Omphalucha*, to which genus the species must be transferred.

42. *Omphalucha hirta* spec. nov.

Forewing : deep wood-brown, suffused with black-brown ; costal edge pale olive, with short black vertical striae and spots ; lines black and fine ; first from one-third of costa, curved to near base of inner margin, touching outer edge of fovea ; outer line from three-fourths of costa to three-fourths of inner margin, shortly inbent below costa, then running outwards and forming a strong blunt angle on vein 5, then as strongly incurved ; the inner margin beyond each line paler brown to median vein ; a black marginal festoon ; fringe brown.

Hindwing : paler, especially along costa ; along inner margin tinged with rufous, and with the veins rufous ; the outer black line angled on submedian fold as well as between 4 and 6 ; cell-spot black, angulated ; an interrupted blackish angled median shade close before the outer line and running to cell-spot ; this median shade is also visible in forewing on inner margin ; hindmargin as in forewing.

Underside pale greyish ochreous, the basal two-thirds of each wing coarsely speckled with black ; outer line of forewing and both lines of hindwing partially marked in black.

Face, palpi, and vertex dark brown ; upper part of face barred with ochreous ; thorax like wings, the metathorax darker ; a black ring at base of abdomen, which is greased ; abdomen beneath, legs, and pectus greyish ochreous ; tarsi externally blackish, with the joints pale ochreous.

Expanse of wings : 36 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

43. *Omphalucha? rufinubes* spec. nov.

Forewing: silver grey, with a rufous tinge in parts; lines black; first thick, curved from one-fourth of costa to near base of inner margin, preceded by a diffuse black and rufous shade; outer line from three-fourths of costa to four-fifths of inner margin, sinuous, outcurved beyond cell, then incurved, somewhat lunulate-dentate below middle, followed by a broad outwardly dentate red-brown shade, beyond which the marginal area is silver-grey, with a few black scales and large black marginal lunules between the veins; midway between first and outer lines is a diffuse dark median shade, outcurved above round the black cell-spot, vertical and irregularly lunulate-dentate below; inner margin between the lines rufous-tinged; below the middle the submarginal red-brown shade is edged with shining whitish; fringe fuscous, with a pale shining base.

Hindwing: like forewing, but without first line, and paler at base.

Underside glossy grey, speckled with blackish and tinged with vinous; all the markings obscurely reproduced.

Face and palpi dark brown; vertex, thorax, and abdomen grey; patagia with an oblique black bar towards their tips; abdomen with a black bar at base.

Expanse of wings: 42 mm.

1 ♀ from N. Bailundu, Angola, September 1901 (Pemberton).

Placed in *Omphalucha* provisionally.

SUBFAMILY ASCOTINAE.

44. *Chogada funesta* spec. nov.

Forewing: pale grey, thickly striated, and in outer half of wing suffused, with dark smoky grey; first line at one-fourth, oblique inwards and double, starting from a black spot on costa; median shade diffuse and black, outcurved round the smoky black ocelloid cell-mark, then straight to middle of inner margin; outer line lunulate-dentate from three-fourths of costa, slightly projecting beyond cell, then incurved to close to median shade, the space between them, except at costa, smoky black; marginal area blackish grey, with an obscure pale waved submarginal line; the black shade between outer and middle line is diffusely continued at right angles above vein 4 to hindmargin; small black marginal spots; fringe dark grey.

Hindwing: with the basal third pale grey; outer two-thirds blackish; the lines as in forewing, but the basal line wanting.

Underside pearly whitish, with a grey tinge; round black discal spots; the outer line black; a broad black marginal fascia in forewing, not reaching anal angle, and leaving small pale patches at apex and between veins 3 and 4; in hindwing narrower and apical only.

Head, thorax, and abdomen pale grey, the last with blackish rings.

Expanse of wings: 35 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

45. *Ectropis inelegans* spec. nov.

Forewing: dirty grey, sprinkled with darker scales; the markings darker, but very much obscured; the usual inner markings, the basal line, the median

shade, and outer line are barely decipherable ; the pale waved submarginal line is distinct, emphasised by the darker edgings ; marginal spots black and distinct ; fringe grey.

Hindwing : similar, but the lines all slightly clearer.

Underside uniform dirty grey, with slightly darker transverse lines and shades.

Head, thorax, and abdomen all equally dingy grey ; palpi and legs darker.

Expanse of wings : 56 mm.

1 ♀ from Gregiani, Niger C. Protectorate, August 1901 (Dr. Ansorge).

The single specimen is somewhat worn, but even when fresh the species can never be clearly marked. *E. griseoalbata* Mab., from Madagascar, though much smaller, is according to the description something like it above, but the underside is quite different.

46. *Paradarisa* ? *viriditincta* spec. nov.

Forewing : dull greyish ochreous, with an olive-green tinge throughout, and covered with darker speckling ; the lines blackish and diffuse ; first at one-fourth, bent on median vein, preceded by a dark shade ; outer line at two-thirds, slightly outcurved in the middle, dentate-lunulate, but marked chiefly by dark spots on the veins, followed by a diffuse blackish shade ; between them are traces of a median shade passing over the dark cell-spot ; submarginal line indicated mainly by dark shades, those preceding it on costa and beyond cell being most conspicuous ; a row of large black marginal spots ; fringe concolorous.

Hindwing : without first or median line, the rest as in forewing ; a dark submarginal cloud before anal angle.

Underside paler, with olive-fuscon striations, large blackish cell-spots, and traces in places of outer line ; a broad blackish marginal border, leaving the extreme margin pale and a quadrate pale patch at apex of forewing.

Head, thorax, and abdomen like wings, the abdomen ringed with darker.

Expanse of wings : 40 mm.

1 ♀ from Nguelo, Usambara (Dr. Kummer).

A dingy-looking species, the position of which is doubtful. I have placed it in *Paradarisa* provisionally, by reason of its resemblance to the Indian species *exclusaria*, the type of that genus. The palpi are porrect, the second segment rough-haired, the third long, spatulate, and drooping.

47. *Trigonomolea nigristigma* spec. nov.

Forewing : chalk-white, grey-speckled ; the lines grey, starting from dark costal spots ; first, obscure, from one-fourth of costa, bent in cell and incurved to near base of inner margin, preceded by a grey shade ; outer line fine, black, dentate-lunulate, at two-thirds, followed by an olive-brown band ; a coal-black discal spot ; median shade from a black spot before it, visible only on costa and inner margin ; submarginal line obscurely marked by dark lunular shades on each side, those beyond cell being darkest ; black marginal spots ; fringe white.

Hindwing : similar, but without the basal shades, and the antemedian black and straight ; the rest as in forewing.

Underside pure white ; a black marginal blotch beyond cell of forewing, the apex itself remaining white, edged inwardly by a blackish band ; cell-spots coal-black.

Face and palpi whitish, palpi externally black; shoulders white with black tips; thorax, patagia, and abdomen whitish; the last with a deep black band on second segment, two black spots on third, and the rest of dorsum darkened with grey scales.

Expanse of wings: 48 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

SUBFAMILY FIDONIINAE.

48. *Obolcola despecta* spec. nov.

Forewing: greyish ochreous, thickly speckled with brown; slight indications of two cross-lines; one vertical just before middle, thickened on inner margin, the other towards hindmargin, running outwards from two-thirds of costa, angled on vein 7, then oblique and swollen before anal angle; there appears also to be a dark line near base; a small dark cell-spot; fringe concolorous.

Hindwing: with the lines still less marked; the cell-spot only plain.

Underside paler, yellowish; the markings therefore plainer.

Head, thorax, and abdomen concolorous.

Expanse of wings: 24 mm.

3 ♂♂ from Ganyonyo, Ivory Coast, May 1903 (Pemberton).

Oxyfidonia gen. nov.

Forewing: costa straight, but strongly convex before apex, which is bluntly produced; hindmargin excised between apex and vein 4, then oblique; a small but distinct fovea above submedian vein.

Hindwing: hindmargin angled at middle, subcrenulate.

Antennae of ♂ plumose; palpi porrect, short; second segment roughly haired beneath, third shortly spatulate; tongue weak; frenulum distinct; hindtibiae flattened and thickened, with four spurs.

Nervation: forewing, cell half as long as wing; discocellular vertically concave; first median nervule at two-thirds, second close to third; radials normal; 10, 11, 7, 8, 9 all stalked from before end of cell, 10 and 11 being coincident throughout, and not anastomosing with 12; hindwing, costal and subcostal closely approximated for one-third of cell; veins 3 and 7 before angles of cell.

Type: *Oxyfidonia fulvida* spec. nov.

49. *Oxyfidonia fulvida* spec. nov.

Forewing: brownish fulvous, irregularly speckled with darker; the costal edge finely dotted with blackish; no distinct lines, but a dark costal spot at one-fourth indicates a basal line, and from another at two-thirds a faint curved outer line can be traced; fringe concolorous, dotted with blackish.

Hindwing: the same, but with distinct traces of an outer sinuous line.

Underside brighter fulvous, with cell-spots and outer lines marked.

Head, thorax, and abdomen like wings; face brown; legs spotted with brown; forelegs brown in front.

Expanse of wings; 26 mm.

2 ♂♂ from Moyamba, Sierra Leone, September—October 1903 (Gator).

SUBFAMILY SEMIOTHISINAE.

50. *Acadra simplicilinea* spec. nov.

Very much like *A. rectistriaria* H.S., but in all cases the oblique line is single, not double, and generally much finer; in the forewing the basal line is bluntly and shortly rounded in cell, then *waved* to inner margin; in *rectistriaria* this line is acutely angled close before the cell-spot, then straight and oblique to inner margin; and the same holds also with regard to the middle line; the submarginal shading in *rectistriaria* above the inner margin is more or less broken up into diffuse lines, in the present species it forms a dense cloud, darker externally and curving outwards into anal angle; in the hindwing especially this difference is noticeable, and the submarginal cloudy fascia is connected by two or three acute angular marks with the single fine outer line.

On the underside the ground-colour is much paler and the markings darker than in *rectistriaria*: in the forewing the median shade is always well expressed, whereas it is absent in H.S.'s species, and in the hindwing the dark outer fascia is never connected with the angle by a darker shade, the whole of the marginal area remaining pale. A more important difference is that in *rectistriaria* the fovea in the ♂ forewing is slight and obscure, and in *simplicilinea* large and conspicuous.

3 ♂♂ from Nguelo, Usambara (Dr. Kummer).

It is altogether a more neatly marked insect than *rectistriaria*, and the cell-spot of forewings seems always larger, more linear and conspicuous.

51. *Gonodela apicepallens* spec. nov.

Forewing: pale greyish ochreous, speckled with darker grey; the costa with fine black streaks; lines olive-grey, indistinct; the basal angled bluntly in cell; the median sinuous, outcurved below costa, beyond a dark linear cell-spot; outer line darker, more distinct, from two-thirds of costa to three-fourths of inner margin, widely bent above, thickened below middle into a black spot between veins 3 and 4; submarginal dark shade diffuse and interrupted, forming a streak at costa and inner margin, and a spot between veins 3 and 4; marginal area rather darker than rest of wing, except a roundish apical space above vein 6, which is paler; blackish marginal lunules between the veins; fringe pale grey, the tips towards the apex of wing darker.

Hindwing: similar, but without basal line; cell-spot round, preceded by the median line; outer line fine, lunulate-dentate, followed by a uniformly broad darker shade.

Underside like upper, but paler; the lines scarcely visible; cell-spots plain; a brownish submarginal fascia forking towards apex of forewing enclosing the pale space.

Head, thorax, and abdomen greyish ochreous.

Expanse of wings: 26 mm.

1 ♀ from Bango, Angola, October 1903 (Dr. Ansorge).

Wings rather narrow and elongate; the forewing with hindmargin simply curved, the hindwing with it bluntly angled.

52. *Gonodela conturbata*.

The species was described from several ♀♀ from Warri, *Nor. Zool.* v. p. 251 (1898). The ♂♂ are much darker, purplish fuscous, but the much-waved outer line

is distinctive. On the underside the yellow tint of the forewings is more developed, in one instance forming a fulvous patch from base and another beyond outer line, the latter showing plainly through on the upperside.

1 ♂ from Moyamba, S. Leone (Cator), accompanied by a typical ♀; 1 ♂ from Canhoca, Angola (Dr. Ansoerge), along with an equally typical ♀; the pair from Angola both dated November 1903; the ♂ from Moyamba November–December 1903, the ♀ February 1904. In both cases the ♀♀ much worn and the ♂♂ both fresh.

53. *Gonodela lunivallata* spec. nov.

Forewing: flesh-coloured grey, with black speckles; the lines dark brown, distinct; first from one-fifth of costa, projecting in cell, and obliquely waved to near base of inner margin; second, at middle, bent on subcostal vein, then oblique to a little before middle of inner margin; outer line from two-thirds of costa, angled on vein 6, then oblique and straight to two-thirds of inner margin, preceded by a pale yellowish line; followed on costa by a short dark streak to the angle, below which the line is geminate, this outer arm being followed by a broad dark cloud, containing blackish lunules touching the line, and produced to hindmargin below apex as a triangular shade; black marginal spots between the veins; fringe dark grey; cell-spot black, before the median line.

Hindwing: with the median line strongly marked before the cell-spot; the double outer line also strongly marked, especially the outer arm, and bent at middle, preceded by a broad yellowish space and followed at a short distance by a thick brown band with lunulate outer edge, but without any dark cloud.

Underside paler, with a slight yellowish tinge; the speckling and lines brown; a broad straight brown submarginal fascia, connected with margin beyond cell and in the forewing forked to apex, containing at the base of the fork a yellowish white blotch.

Head, thorax, and abdomen like wings; face somewhat darker.

Expanse of wings: 30 mm.

1 ♂ from Moyamba, Sierra Leone, March 1903 (Cator).

54. *Gonodela punctiversa* spec. nov.

Forewing: whitish, more or less overspread with olive-grey and thickly speckled with fuscous; first line very obscure, near base; median line thick, a little before middle, vertical and waved, preceded by a thick cell-mark; outer line from two-thirds of costa to three-fourths of inner margin, oblique outwards to vein 6, there bluntly angled, and lunulate-dentate, followed on costa by a thick dark streak to the angle, and below the middle by a broad dark shade; an olive and fuscous cloud on hindmargin beyond cell, with a pale quadrate apical patch above it and the marginal area below it whitish speckled with fuscous; the pale submarginal line very indistinct; a dark marginal crenulate line; fringe pale chequered with olive-grey.

Hindwing: with a thick waved dark median line, also preceded by the black cell-spot; outer line lunulate-dentate throughout, followed by a broad dark fascia edged by the submarginal line.

Underside white, speckled with brown, with thick brown median lines and broad, irregularly edged, brown submarginal fasciae; forewing with a brown cloud on hindmargin above middle; cell-spots brown, preceding median lines.

Head, thorax, and abdomen olive-grey, much darkened with fuscous; abdomen beneath and legs whitish speckled with olive-brown.

Expanse of wings : 30 mm.

1 ♀ from Moyamba, Sierra Leone, April 1903 (Gator).

Distinguished from all other species by the cell-spot preceding the middle line in both wings.

55. *Gonodela rectilinea* spec. nov.

Forewing : with the whitish ground-colour almost hidden by dense brownish grey striae, beyond the outer line entirely suffused with grey-brown, except a slight pale patch towards apex above vein 6 on the course of the submarginal line; costa ochreous dotted with black; lines brownish, the first and second very obscure and interrupted in middle, the first at one-fourth, the median before middle; outer line at two-thirds vertical and nearly straight to three-fourths of inner margin; a slight dark cell-spot; distinct brown marginal lunules; fringe grey with a bright pale base.

Hindwing : without first line.

Underside white with brown striae and tinged with yellowish; the costa yellow; cell-spots distinct; middle and outer lines brown; marginal space occupied by a broad brown submarginal band, extended to hindmargin beyond cell, and towards costa of forewing washed with yellow; a distinct white spot above vein 6 before apex; marginal area below middle white.

Head, thorax, and abdomen mottled brown and grey.

Expanse of wings : 29 mm.

1 ♂ from Ganyonyo, Ivory Coast, May 1903 (Pemberton).

Near *G. unicolor* Warr. from Natal, but distinguished by the straight unangled third line.

56. *Gonodela unicolor* spec. nov.

Forewing : pale wood-brown, with very fine and small strigulations; costa dotted alternately ochreous and blackish, with small blackish spots at the origin of the lines; these are slender, brown; first at one-fourth, bent in cell; outer at three-fourths, angled on vein 6, then nearly straight, very faintly convex basewards; median shade waved, more diffuse, touching the small dark cell-spot; marginal dark line very fine; fringe brown, paler at base.

Hindwing : the same but without first line; outer line bent below vein 4.

Underside paler, yellowish buff, the striae and lines brown; a diffuse brown shade beyond outer line; costa of forewing yellowish.

Head dark brown marked with black; thorax and abdomen like wings; anal tuft ochreous.

Expanse of wings : 28 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

Hindwing protuberant at middle of hindmargin, hardly toothed; antennae simple, subserrate; hindtibiae thickened; forewing without fovea.

Mesothisa gen. nov.

Forewing : costa straight for two-thirds, then strongly arched; the apex produced and falcate; hindmargin strongly excised between apex and vein 4, slightly again between 4 and 3; anal angle rounded off.

Hindwing : kite-shaped ; hindmargin angled at vein 4 and crenulate.

Antennae of ♂ bipectinate for three-fourths ; palpi porrect, the second segment roughly haired, third spatulate, drooping, at right angles with second ; tongue and frenulum present ; hindtibiae not swollen, with four spurs.

Nervation : forewing, cell not quite half as long as wing : discocellular angled, both upper and lower arms oblique : first median nervule at five-eighths, second close to third ; radials normal ; 7, 8, 9, 10, 11 stalked from before end of cell, 8 and 9 compressed and approximated, 10 and 11 coincident, anastomosing with 12 and separating afterwards : hindwing, costal and subcostal quite shortly approximated near base ; 6, 7, and 3, 4 from angles of cell. No fovea in forewing.

Type : *Mesothisa flaccida* spec. nov.

The species partake of the characters of *Semiothisa* on the one hand and *Hyposidra* on the other, being more akin to the latter.

57. *Mesothisa flaccida* spec. nov.

Forewing : ochreous striated with pale brown, with which colour the costal half of wing is slightly suffused ; lines diffuse, grey ; first from one-sixth of costa to one-third of inner margin, oblique outwards and faint to median, then vertical and broad ; outer line (in the single specimen) very indistinct, but marked by brown dots on veins and accompanied by a grey shade, apparently oblique outwards from before apex, acutely angled on vein 7, then oblique inwards to three-fourths of inner margin ; a small black cell-spot ; fringe worn ; a dark cloud along margin from apex to vein 4.

Hindwing : with a thick waved grey-brown outer line straight from before costa to anal angle, continuing the outer line of forewing ; cell-spot dark, preceded by a faint inner diffuse band ; the margin before anal angle thickly striated and browner.

Underside paler, with the markings rather clearer.

Head, thorax, and abdomen ochreous ; face white with black scales ; tips of palpi darker.

Expanse of wings : 40 mm.

1 ♂ from Sierra Leone.

58. *Mesothisa gracililinea* spec. nov.

Forewing : pale ochreous, slightly washed with darker, and dusted with brown atoms ; the lines fine, pale brown ; first from one-fifth of costa to one-third of inner margin, angled outwards above and below median vein ; outer line at four-fifths, starting from a pale brown costal spot, bluntly bent on vein 7, then straight, with a faint bend outwards on vein 3, to inner margin close to anal angle ; median shade diffuse and obscure, sinuous, well curved outwards above middle ; cell-spot black, of raised scales ; fringe brown.

Hindwing : like forewing, but without first line, the outer line straight.

Underside with the ground-colour warmer ochreous, the speckling browner, the lines more distinct : forewing with a second line, not seen above, at two-thirds, angled acutely on vein 7, then strongly incurved and all but touching outer line on submedian fold ; inner margin whitish ; the cell-spots dark in a pale space ; traces of a submarginal line.

Head, thorax, and abdomen pale ochreous; basal segments of abdomen with pairs of dark spots on dorsum.

Expanse of wings: 44 mm.

1 ♂ from Ganyonyo, Ivory Coast, May 1903 (Pemberton).

59. *Peridela butaria* ab. ? *spilota* nov.

Larger than Swinhoe's *butaria*, rather yellower in coloration, covered with minute brownish frecklings, which are densest towards base; a nearly vertical brown line near base and a small brown cell-spot; outer line bent outwards at costa and angled below vein 6, much as in the type form and equally indistinct, followed by a darker band which is parallel to the line and not connected apparently with the outer margin as in *butaria*; this band is marked by dark spots between the veins; outer margin pale, not clouded; small dark marginal spots between the veins; fringe concolorous.

Hindwing: similar, but without inner line; the cell-spot large.

Underside with an evenly broad dark grey submarginal band, darker between the veins, quite unconnected with the hindmargin; cell-spots distinct.

Head, thorax, and abdomen like wings; face and palpi brown.

Expanse of wings: 35 mm.

1 ♀ from Taveta.

Although the specimen was accompanied by an undoubted ♀ of *butaria* from the same locality, I am not at all sure that it is not a distinct species.

SUBFAMILY ENNOMINAE.

GENUS *Miantochora* Warr.

♀. *Forewing*: elongate; costa slightly sinuous, depressed at apex, which is bluntly subfalcate; hindmargin excised between 8 and 6, vertically protuberant between 6 and 4, then oblique.

Hindwing: angled at vein 4; dentate-lunulate above, and crenulate below the angulation.

Antennae fine and filiform; abdomen short, depressed, with long exerted ovipositor, as in *Hyposidra*.

In general appearance the two ♀♀ recall those of *Geolyces* (to which Colonel Swinhoe would sink the genus: cf. *Tr. Ent. Soc.* 1904. p. 518); but the hindwing in that is evenly curved, not angled nor crenulate.

60. *Miantochora incolorata* Warr. .

The ♂ only was known, when I described the species, *Nov. Zool.* vi. p. 64 (1899). The ♀ differs considerably, both in size, outline, and coloration.

Forewing: ochraceous dusted with darker between the inner and outer lines; first line brown, at one-fourth, oblique from costa to median vein, along which it runs inwards, then vertical, preceded by a broad band of olive, the basal area below the median ochraceous; just beyond it an obscure median shade starts from costa, is swollen below median, and runs to middle of inner margin; outer line from three-fourths of costa to two-thirds of inner margin, marked by large

brown spots on veins, oblique outwards to vein 6, then strongly concave inwards, followed by a deep fulvous and olive shade edged with pearl-grey, running vertically from costa to vein 5; beyond this is a paler olive shade dentate outwards between the veins and edged by the pearly grey submarginal line; marginal area pale lilac-grey with ferruginous streaks on the veins, the space between veins 8 and 5 occupied by a crescent-shaped patch of dark ferruginous, separated from the olive shade, between veins 6 and 7 by a round pale yellow blotch, and between veins 6 and 5 by a round grey-edged black blotch; fringe ferruginous; cell-mark brown, lunate.

Hindwing: pale greyish towards costa, washed with ochraceous beyond; a pale lilac nearly straight line from before apex to before anal angle, edged on both sides with olive; internally the olive passes into a brown fulvous band; externally it forms broad teeth between the veins edged by a pale lilac submarginal line; the ferruginous subapical patch separated by a waved yellow line, and the tooth between 4 and 6 filled in with blackish; an olive-brown cell-spot.

Underside pale ochreous with brown freckling; the outer margins of both wings and basal area of forewing olive-grey, edged by a row of brown spots on veins; the ferruginous subapical patches less marked, but the yellow spots distinct; cell-spots and lower half of median lines brown.

Face, vertex, and shoulders pale ochreous, the vertex slightly darker; patagia, thorax, and abdomen ochraceous; palpi externally brown; abdomen beneath and legs pale ochreous, the last spotted with brown.

Expanse of wings: 60 mm.

1 ♀ from Moyamba, Sierra Leone (Cator).

Col. Swinhoe, in *Tr. Ent. Soc.* 1904. p. 519, sinks this species to *inaequilinea* Warr.; but that species has the angulation of both wings in the middle very much more decided than the present: *inaequilinea* itself, however, must sink to *gumpfenbergi* Moeschl., described as a *Hyposidra*, *Abh. Senck. Ges.* xv. p. 96. fig. 5 (1889).

61. *Nopia admiranda* spec. nov.

Forewing: pale stone-colour, overlaid with greenish grey and with a faint tinge of violet; costa purplish fuscous, beyond middle and at apex spotted with fulvous; the lines purplish fuscous; first at one-third, sharply angled outwards in the cell; second, slightly crenulate, from before the apical fulvous spot to two-thirds of inner margin, inwardly diffused with olive; fringe purple-fuscous in basal half, paler beyond but mottled with dark beyond veins; cell-spot black; a very obscure pale submarginal line.

Hindwing: the same, with one central line.

Underside bright deep yellow, covered with red-brown striations; costa of forewing and all the lines red-brown; margins of both wings broadly violet-grey, with a slight lustre.

Face, palpi, and forelegs bright ferruginous; vertex and shoulders violet-grey; thorax and patagia cream-colour; abdomen (greased) probably the same, with a dark ring at base; antennal shaft white, the pectinations rufous.

Expanse of wings: 30 mm.

1 ♂ from Durban, Natal (G. F. Leigh).

Distinguished by the colour from the type species, *N. soprintataria* Wik., which is reddish.

GENUS *Xenimpia* Warr.

The examples of *X. erosa* Warr., the only species of the genus, have hitherto all been ♀♀. The ♂, of which a single specimen has at last been received, differs from the ♀ in the same way as the ♂♂ of *Procypha* from their ♀♀. In both wings the hindmargin is simple, neither toothed nor excised; in the forewing it is scarcely sinuous, in the hindwing bluntly bent at veins 4 and 6. In fact, except that the antennae of the ♀ are quite simple, while in *Procypha* they are pectinated, the two genera are identical; both, however, differ from the genus *Orsonoba* in having veins 10, 11 of forewing coincident instead of separate.

62. *Xenimpia erosa* Warr.

The ♂ of this species is dull pinkish fawn-colour, mottled along costa with dark grey, and blackish grey along its base and through the cell; the lines are dark: the first from one-third of costa is acutely angled on subcostal at the end of cell, then oblique to one-fourth of inner margin; the outer line is slightly curved from two-thirds of costa to inner margin just beyond first line; the submarginal line is shown by a black blotch at anal angle and some black and white scales below apex, united by a faint grey cloud; fringe fawn-colour tipped with white.

Hindwing: without speckling or trace of lines.

In neither wing is there a vestige of the hyaline spaces of the ♀.

Underside paler; the markings of forewing plainer; the hindwing slightly speckled, and with traces of three or four faint curved lines.

Shoulders and base of patagia, palpi externally, and front of forelegs grey; rest of head, thorax, and abdomen like wings.

Expanse of wings: 37 mm.

1 ♂ from Durban, Natal, July 1902 (K. Thorn).

A ♀ from Durban (G. F. Leigh) agrees with the ♂ here described in having the ground-colour dull red, instead of grey as in the type.

SUBFAMILY PROSOPLOPHINAE.

63. *Axiodes figurata* spec. nov.

♂. *Forewing*: pale speckled grey, with a darker grey central fascia, edged by blackish lines and very broad at costa; first line from one-fourth of costa, oblique outwards to median vein, then waved inwards to one-third of inner margin; outer line from a little before apex, slightly oblique inwards to vein 4, then more strongly and waved to near middle of inner margin, forming a rounded prominence outwards in submedian interspace and a sinus inwards above it; cell-spot blackish; fringe concolorous.

Hindwing: cinereous grey, with an indistinct waved darker postmedian line and slight cell-spot.

Underside ashy grey.

Head, thorax, and abdomen ashy grey.

Expanse of wings: 30 mm.

1 ♂ from the foot of the Nieuwveld Mts., five miles north-west of Beaufort West (Miss Butt).

64. *Axiodes inangulata* spec. nov.

Forewing: pale grey, shaded with darker grey and with an admixture of whitish grey scales; costa with short dark striae; lines black; first near base, forming a conical projection outwards on median vein, obsolete below towards inner margin, starting from near base of costa; outer line from costa close before apex, oblique inwards and straight to vein 4, then sinuous and inflexed to median fold in middle of wing, where it forms a very acute angle, and is retracted to three-fourths of inner margin, forming a conical projection on vein 1; this line is preceded by a dark olive-brown cloud and finely edged with whitish; cell-spot large, black, lying on the edge of a streak of whitish scales running in from below costa to end of cell, and produced finely along the cell-fold; an obscure whitish submarginal line, followed in places by darker shades, and more or less parallel to outer line; marginal line dark brown; fringe grey.

Hindwing: brownish fuscous, with dark cell-spot and pale postmedian line.

Underside brown-grey, with dark speckling; paler along costa, where the speckling is blacker; marginal dark shades, broader in forewings; cell-spots black.

Head, thorax, and abdomen grey; thorax and pectus hairy.

Expanse of wings: 28 mm.

1 ♂, 1 ♀ (the latter worn) from the foot of the Nieuwveld Mountains, five miles north-west of Beaufort West (Miss Butt).

65. *Axiodes intricata* spec. nov.

Forewing: pale purplish grey; the central fascia darker, olive-fuscous, edged with very sinuate black lines; first line thick, from one-third of costa, angled on median vein, then oblique inwards, with a smaller angle outwards on vein 1, to one-third of inner margin; outer line from five-sixths of costa, excurved and lunulate to below vein 5, then running inwards to the origin of vein 2, vertical to 3, forming a rounded prominence in submedian interspace, then oblique inwards to three-fifths of inner margin; a large black cell-spot; this fascia is followed by a fine pale line and an olive-fuscous shade, uniformly curved, except for a small indentation on vein 2, the narrow marginal area and fringe remaining pale grey; all the veins below middle tinged with red.

Hindwing: fuscous grey, with black cell-spot and waved dark postmedian line, most conspicuous on inner margin.

Underside pale grey, darker towards hindmargins; cell-spots black and distinct; outer line fine.

Head, thorax, and abdomen ashy grey.

Expanse of wings: 36 mm.

1 ♀ from the foot of the Nieuwveld Mountains, five miles north-west of Beaufort West (Miss Butt).

Hindmargin of wings very faintly crenulate.

66. *Axiodes sinuata* spec. nov.

Forewing: fawn-colour, grey-speckled; the costa with grey striae, thickened beyond middle; the lines velvety black; first from one-fourth of costa to one-third of inner margin, forming a wedge-shaped projection above and below the median vein, and preceded by a diffuse blackish shade; outer line sinuous, from five-sixths

of costa to three-fifths of inner margin, followed by a diffuse blackish shade, densest beyond cell and above inner margin; cell-spot black, lunate; veins towards hind-margin paler; fringe fawn-colour.

Hindwing: with sinuous black postmedian line, followed by a dark cloud, which is most intense at inner margin; cell-spot small.

Underside reddish fawn-colour, with sparse dark speckling, and striae along costa of both wings; cell-spots black.

Head and thorax hairy, greyish fawn-colour; abdomen pale fawn; terminal segment of palpi fuscous.

Expanse of wings: 35 mm.

1 ♂ from the foot of the Nieuwveld Mountains, five miles north-west of Beaufort West (Miss Butt).

67. *Euomoea ochrea* spec. nov.

Forewing: yellow ochreous, with fine sparse blackish transverse striae; the lines formed by black dots on veins connected by confluent striae, more thickly marked at costa; first line at one-third, slightly waved and inclined inwards; second from four-fifths of costa to three-fifths of inner margin, curved below costa; a large black cell-spot, and small black marginal dots; fringe concolorous.

Hindwing: paler, with slight cell-spot and postmedian line from cell to inner margin.

Underside yellowish, with few speckles; outer line of forewing only showing towards costa; hindwing with fine curved submarginal line, not visible above.

Head, thorax, and abdomen yellow, the last much paler.

Expanse of wings: 27 mm.

1 ♂ from Tweedie, Natal (Morton).

68. *Exelis ansorgei* spec. nov.

Forewing: dull dirty grey with darker speckles; the two lines fuscous; first, from one-fourth of costa to middle of inner margin, projecting outwards on submedian fold; outer line from two-thirds of costa, curving inwards over the blackish cell-spot, approaching first line in the submedian space, then outcurved and forming a double dark mark at three-fourths of inner margin; fringe grey.

Hindwing: with an irregularly waved dark line just beyond middle, and traces of a submarginal shade, most visible at anal angle; a blackish cell-spot.

Underside equally dingy; the costa of forewing dull ochreous with dark striae. Thorax and abdomen dull grey; head and palpi dark brownish.

Expanse of wings: 30 mm.

1 ♂ from Degama, Niger Coast Protectorate (Dr. Ansorge).

Hindmargin of forewing long and oblique, passing into inner margin without forming a distinct anal angle.

NEW SPECIES OF *THYRIDIDAE*, *URANIIDAE*, AND *GEOMETRIDAE*, FROM THE ORIENTAL REGION.

By W. WARREN, M.A., F.E.S.

FAMILY *THYRIDIDAE*.

1. *Banisia dohertyi* ab. *nigriflexa* nov.

This differs from typical *dohertyi* Warr. (= *stenosoma* Hmps.) in having deep black markings on both wings. In the forewing the second fascia, from below the subcostal vein to inner margin, is purplish black, the space between it and the basal fascia also being darkened; from its outside edge a purplish black streak runs along upper half of cell below the subcostal vein, and is continued more narrowly to above the white apical patch. On the hindwing the same two fasciae are continued as purplish black vertical bands to anal angle.

2 ♂♂ from the north side of Choiseul Island, Solomons, December 1903 (Meek).

An almost exactly parallel instance of partial melanism occurs in the aberration *atribasalis* Warr. of *Phurambara nitens* Butler, recorded from New Guinea, cf. *Nor. Zool.* vi. p. 317 (1899).

The type form of *dohertyi* appears to be widely distributed: it is recorded by Hampson from Ceylon and Padang, Sumatra; my type was from Bali; and I have since seen specimens from Isabel Island, Solomons; from Upper Aroa River, New Guinea; and from Mulgrave River, Cairns, Queensland (the last from the Barnard Collection).

2. *Banisia plagiata* spec. nov.

Forewing: pale ochreous, tinged and reticulated with pale red-brown; costal streak and fascia-form markings deep brown; these are a narrow band near base, a vertical antemedian fascia, slightly broader above, a sinuate postmedian fascia much broader above middle, a curved band from before apex to middle of hind-margin, and a square blotch at anal angle; between the submedian fold and vein 2 a pale spot on each side of the outer fascia is hyaline white, and the pale apical blotch is subhyaline; fringe dark brown.

Hindwing: with a narrow band near base, a bifurcate fascia in middle, a narrow postmedian and subapical band dark brown; the spaces in middle of wing round the bifurcate fascia semihyaline white.

Underside similar.

Head, thorax, and anal half of abdomen dark brown; vertex lighter; basal half of abdomen pale ochreous, dusted with reddish, and with the dorsum dark.

Expanse of wings: 26 mm.

1 ♂ from south side of Choiseul Island, Solomons, December 1903 (Meek).

GENUS *Canaea* Walk.

This genus, made by Walker for *semitessellata*, from Borneo (cf. *Journ. Linn. Soc.* vii. p. 73), is differentiated from all other genera of *Thyrididae* with which I am acquainted by the structure of the antennae of the ♂. These are pectinated,

but uniseriate, the pectinations curved and close, thickened towards their extremity and ciliated throughout, gradually decreasing in size towards the apex. At present, as far as I know, the type species is the sole representative of the genus.

3. *Striglina curvilinea* spec. nov.

Very much like *S. scitaria* Wlk., for which it may be easily mistaken ; but the dark oblique line of forewing does not run straight from apex to middle of inner margin, but is curved outwards and reaches inner margin beyond middle, brown, and less strongly marked than in *scitaria* ; the ground-colour is ochreous yellow and the striae brown ; a very faint brownish mark stands at the upper end of the cell, from which there is sometimes the trace of a straight line of connected striae meeting the oblique line at vein 2. On the hindwing the line is antemedian and thicker, and a curved line of striae runs from costa beyond it to near anal angle. Underside the same, both wings with small brown cell-spot.

Expanse of wings : ♂ 22 mm. ; ♀ 25 mm.

1 ♂, 1 ♀ from Bougainville, Solomon Islands, April 1904 (Meek).

I have seen other examples from the Solomon Islands, but have passed them over as small *scitaria*.

4. *Striglina scalata* ab. *nigrata* nov.

Differs from the type form of *scalata* Warr. in having the forelegs, the base of patagia, the basal segment of abdomen, and often the segmental rings, black ; all the dark markings of the wings are at the same time more numerous and blacker. In the ♀ especially the dark markings are strongly expressed and the ground-colour flushed with fulvous.

3 ♂♂, 2 ♀♀ from Bougainville, Solomon Islands, April 1904 (Meek).

FAMILY URANIIDAE.

SUBFAMILY EPIPLEMINAE.

5. *Epiplema brunnea* spec. nov.

Forewing : smoky grey-brown, without speckles except along costal edge ; the lines thick, dark brown ; first obscure and interrupted, at one-third, marked by a slight curve or angle in cell and on submedian fold ; outer line at two-thirds, nearly vertical, but slightly outbent at vein 4, and inbent on submedian fold ; a waved submarginal line from apex to vein 3 ; the two outer lines are edged outwardly, and the basal inwardly with ferruginous ; hindmarginal area slightly paler brown ; fringe brown.

Hindwing : with outer line angled on vein 4 and pale-edged outwardly ; a brown streak on discocellular, meeting a brown line along median vein ; a brown shade from upper tooth to below lower tooth ; marginal area paler.

Underside of forewing dull smoky brownish, paler along inner margin ; of hindwing paler, with dark postmedian line.

Head, thorax, and abdomen like wings ; face and palpi black.

Expanse of wings : 26 mm.

1 ♀ from Obi Major (Waterstradt).

Hindmargin of forewing bent at veins 6 and 3 ; hindwing toothed at 4 and 7.

6. *Epiplema catenigera* spec. nov.

Forewing : lilac-grey, with faintly darker rippling ; costa striated with fuscous ; lines brown ; first curved before one-third ; second from costa before two-thirds, obliquely crenulate outwards and angled on vein 4, then interrupted and ending at two-thirds of inner margin as a brown spot ; submarginal line of small brown blotches, edged inwardly with darker, from apex to anal angle, those beyond cell obscurely double, those below middle becoming linear ; fringe concolorous ; a slight dark patch at anal angle.

Hindwing : without striations except just at apex and towards inner margin : a short brown line near base ; an outer bent brown line, angled on vein 4, and edged with ochreous, followed by a fulvous flush, and preceded below middle by a broad brown lunate shade ; a ferruginous line from base along median vein forming an angle with a narrower discal streak ; a dark brown line of coalescent lunules along hindmargin from upper tooth to below lower tooth, crossed by a pale dash on veins 3 and 4.

Underside pale lilac-grey ; the hindwing slightly striated and still paler.

Head, thorax, and abdomen like wings ; face and palpi black.

Expanse of wings : 22 mm.

1 ♂ from Bougainville, Solomon Islands, April 1904 (Meek).

Distinguished from *plicata* Snell, to which it is closely allied, by the submarginal line of spots extending from apex to anal angle.

7. *Epiplema cretistriga* spec. nov.

Like *E. plicata* Snell. from Celebes and Java, but with all the dark markings finely edged with ochreous. This is particularly noticeable in the hindwing, where the dark marginal shade, extending from upper tooth to anal angle, and in its upper course peculiarly sinuous, is conspicuously margined with pale ; the bright ferruginous streak from base above median vein is edged above along the fold by a line of bright cream-colour, which forms a spot at the end within the fork formed by the streak and the oblique discal mark.

The whole of the hindwing is peculiarly smooth and devoid of speckling.

The abdomen has a dark ring at base, and in the ♂ is elongate and ends in a long ochreous anal tuft.

Expanse of wings : ♂ 18 mm. ; ♀ 22 mm.

1 ♂, 1 ♀ from the north side of Choiseul Island, Solomons, December 1903 (Meek).

8. *Epiplema exsanguis* spec. nov.

Forewing : chalk-white ; costa with short black striae ; three transverse buff lines ; first at one-fourth, bent on median vein, thick and sometimes interrupted ; second at one-half, double and biangulate, reaching inner margin beyond middle, the inner arm marked by a black spot between veins 1 and 2 ; third interrupted, formed of a patch on costa and at anal angle and a slighter shade before middle of hindmargin, marked above by a black spot above vein 6 and sometimes by another slighter spot below that vein ; a marginal line of brownish striae ; fringe pale, with darker dividing line.

Hindwing : costa with black oblique striae as in forewing ; the three lines as in forewing ; the second without the black spot above inner margin ; the third

accompanied by fine darker striae; a blackish dot before lower tooth and some buff shades between the teeth; fringe white tipped with dark, the apex of the upper tooth blackish.

Underside of forewing suffused with pale brownish grey, except along costa and inner margin, the two outer lines rather darker and nearly straight; hindwing with a few striae only; costa of both wings with short black striae; of forewing blackish at base.

Head, thorax, abdomen, and legs pure white; the tarsi with black joints; forelegs fuscous in front and internally.

Expanse of wings: 15—17 mm.

9 ♀♀ from Mt. Wuchi, Hainan, May 1903.

Nearest to *E. fulvilinea* Hmps., which has no dark spot above middle of inner margin; also resembling *E. paradeicta* Warr., from Celebes, in the forewing.

The hindmargin of forewing is slightly bent at veins 6 and 3, straight between; hindwing with two slender teeth.

9. *Epiplema guttata* spec. nov.

Forewing: mouse-grey, densely covered with fine dark striae; a dark cell-spot, and a small spot obliquely below it on submedian fold nearer base; outer line brown, at two-thirds, bluntly bent outwards on vein 4 and marked by three dark spots, one below subcostal vein, the second above vein 4, the third on submedian fold; sometimes the spots are faint, in other cases the line itself is almost obsolete; a slight brownish marginal cloud from vein 7 to 4, containing three black spots between veins on its inner edge, the lower one often obsolete; a fine marginal line; fringe pale grey.

Hindwing: with the outer line angled on vein 4, with spots as in forewing; two dark spots on margin between the teeth.

Underside paler grey, with the striae fewer, but stronger and blacker.

Face and palpi black; thorax and abdomen grey like wings; vertex paler.

Expanse of wings: 24—26 mm.

4 ♂♂, 4 ♀♀ from New Georgia, Solomons, March 1904 (Meek).

In the ♀ the hindmargin of forewing is faintly indented between veins 6 and 4 and in the hindwing excised from 7 to 4, with slight teeth at 4 and 7; in the ♂ the excision in both wings is much less, and the hindmargin at vein 4 of hindwing is rounded. The antennae of the ♂ are clavate serrate.

10. *Epiplema lignicolor* spec. nov.

Forewing: dull wood-brown, finely speckled with black brown; the costa, especially at base, with short dark streaks; lines obscure, marked by brownish scaling; first from one-fourth of costa to one-third of inner margin, angled on median vein; second from two-thirds of costa, forming a blackish subcostal mark, bent outwards beyond cell, and oblique inwards from vein 4, followed on inner margin by an irregular blotch of black brown scales; another blotch at anal angle; a slight curved brown black line before the excision; fringe concolorous.

Hindwing: more suffused with brown and speckled with darker; an outer dark brown line bluntly toothed on vein 4 and below it somewhat crenulate; marginal area filled, especially towards costa, by a dark shade, most intense in the ♀, and sometimes with a submarginal line indicated; a brown sinuous streak from upper

tooth to vein 3, outwardly with a fine ochreous edging before the dark brown fringe, inwardly with a tooth on vein 5; an indistinct brown curved basal line.

Underside dull wood-brown; in the forewing suffused with fuscous except along costal and hind margins, and with a black blotch at anal angle; in the hindwing paler, with a dark submarginal fascia.

Head, thorax, and abdomen wood-brown; face and palpi black.

Expanse of wings: 28—30 mm.

2 ♂♂, 2 ♀♀ from Bougainville, Solomon Islands, May 1904 (Meek).

Nearest to *bicolor* Warr., from Ron Island, but of quite different coloration. Antennae with lengthened clavate teeth.

11. *Epiplema nigropustulata* spec. nov.

Forewing: chalk-white; costa with a few fine ochreous and blackish streaks; a black spot near base, and another at middle; from the latter a crenulated black line, bent on vein 6, runs to median vein, followed by a broad fulvous yellow shade, of which a very faint trace is visible on inner margin; a yellowish submarginal shade, narrow at costa, broader below middle, interrupted between; three black dots before hindmargin, two beyond cell, the other on submedian fold; fringe buff, whiter towards anal angle, with a large black spot at apex.

Hindwing: with a yellow spot near base above inner margin; a yellow central band, with a fine black edge above inner margin, followed beyond cell by a diffuse fulvous cloud, which below vein 4 passes into an ochreous grey cloud with darker striae; costa with yellow striae; two fulvous black-edged lunules between the teeth, the fulvous colour running out into each tooth, which is tipped with black; fringe white, with an interrupted buff basal line, and a black dot at the end of each tooth.

Head, thorax, and abdomen white; palpi and legs white spotted with black; black spots at base of antennae and top of face.

Underside of forewing except inner margin and fringe dark grey; of hindwing white; the black spot at apex of fringe of forewing well marked.

Expanse of wings: 20 mm.

1 ♂ from Obi Major (Waterstradt).

12. *Epiplema umbrimargo* spec. nov.

Forewing: ochreous drab, speckled with brownish fuscous; costa dark speckled; lines interrupted: first at about one-third, strongly outcurved, but marked mainly by a brown dash below subcostal vein, touching an oblique ferruginous cell-mark, and by an oblique line inward from submedian fold to inner margin; outer line diffuse, brown mixed with ferruginous, from a brown costal mark at two-thirds, angled at veins 6 and 4 and partially double in middle, then incurved to a brown blotch beyond middle of inner margin; three brown costal spots before apex; some brown striae before hindmargin, edged by a perfectly straight line from apex to vein 2; fringe concolorous.

Hindwing: rather browner, with an outer line bluntly bent at vein 4, and a brownish shade from upper to below lower tooth, above which are some lustrous scales.

Underside ochreous, suffused with fuscous grey in forewing, with only a fuscous grey submarginal fascia in hindwing.

Face and palpi black ; vertex, thorax, and abdomen like wings.

Expanse of wings : 25 mm.

2 ♂♂ from the south side of Choiseul Island, Solomons, December 1903 (Meek).

Forewing slightly toothed at vein 4, the excision above it shallow ; hindwing toothed at 4 and 7. Belongs to the group of closely allied species, including *stigmatalis*, *liquicolor*, *bicolor*, etc.. The antennae with distinct clavate teeth.

13. *Epiplema ustanalis* spec. nov.

♂. *Forewing* : dull chalk-white freckled with pale grey, sometimes with dark violet-grey ; costa thickly marked with brown black striae ; lines very obscure and interrupted ; first indicated only by dark sagittate marks on submedian fold, in cell, and on subcostal vein ; second by a subcostal spot at two-thirds, then running out as a fine thread to vein 5, thence oblique inwards to two-thirds of inner margin ; an irregular brownish streak of three coalescent lunules before the excision, and some brown-grey spots and streaks above anal angle ; fringe brown, slightly mottled with grey.

Hindwing : white striated with brown and grey ; these striae above the median form irregular dark blotches, antemedian, median, and postmedian ; a slight brown line near base, and a dark brown outer line angled on vein 4, and below the median conspicuous and thickened ; the anal space beyond it and partially just before it brown-grey, mixed with slightly lustrous violet scales, joined to costa submarginally by a lustrous streak edged with brownish ; an irregular brown shade of contiguous lunules along margin from upper to below lower tooth, finely edged with whitish before the dark brown fringe ; an interrupted ferruginous streak along cell above the median vein.

Underside dull blurred cinereous brown, paler in hindwing, especially towards base and along and beyond cell.

Vertex, thorax, and abdomen like wings ; the anal segments of abdomen sprinkled with brown scales ; face and palpi black ; forelegs and pectus smoky brown.

♀ with body and forewing wholly dull grey-brown ; the base and a postmedian shade darker.

Expanse of wings : ♂ 35 mm ; ♀ 40 mm.

7 ♂♂, 1 ♀ from north side of Choiseul Island, Solomons, December 1903 (Meek).

Allied to *E. coerulescens* and *coeruleopicta* Warr., which it agrees in form of wings.

14. *Epiplema ustiplaga* spec. nov.

Forewing : white ; costa with buff striations, those near base mixed with fuscous and extending into the cell ; an obscure inner line at one-fourth, rarely visible below middle ; an interrupted macular line at one-half, including a dark cell-spot, and a black spot above vein 1 ; a buff blotch on costa before apex and on inner margin before anal angle, a third on hindmargin between veins 4 and 6, extending narrowly along margin to apex ; a black submarginal spot above vein 6 ; fringe buff from apex to vein 3, then white.

Hindwing : white ; the outer half of wing below vein 6 fulvous, containing in

the middle a large cloud of black striae and traces of a median line : sometimes near base there are traces of a fulvous line ; a buff marginal line, blackish between the teeth ; fringe white, with the tips buff.

Underside of forewing brownish grey, except along inner margin ; of hindwing white with a few buff striae along costa ; a dark lunule before upper tooth and a spot below lower tooth.

Head, thorax, and abdomen white ; face white, with the upper third brown-black ; palpi black, with the tips of the segments white ; tarsi spotted with fuscous.

Expanse of wings : 17 mm.

4 ♂♂ from Mt. Wuchi, Hainan, May 1903.

Like *E. fulvata* Warr., with which it agrees in the forewing.

15. *Epiplema vacuata* spec. nov.

Forewing : chalk-white ; costa with a few dark striae ; a brown costal spot at base, another at one-sixth, indicating first line, which is faint, a third just before middle ; from this a median buff line is slightly excurved to vein 4, where it is contiguous internally to a brown linear cell-mark, and ends in a vertical streak at middle of inner margin reaching submedian fold ; a buff spot on costa before apex ; a row of small buff submarginal spots, sometimes with brown internal edges, the margin beyond them above middle and the marginal line also buff ; fringe white, tinged with buff above middle, with a large black spot at apex and tipped with dark beyond veins 4 and 6.

Hindwing : with a buff spot at base of median vein, another on submedian fold before middle, and one on costa before apex ; the marginal area from upper to lower tooth filled with buff, as well as the teeth themselves, the tips of the fringes of which are edged with dark.

Underside white ; forewing, except along inner margin and more narrowly along hindmargin, brown-grey ; fringes white, with dark tips at apex of forewing and beyond veins 4 and 6 of forewing and 4 and 7 of hindwing ; hindwing with two yellow submarginal spots.

Head, thorax, and abdomen white : top of face and tips of segments of palpi black ; legs white ; forelegs black-mottled.

Expanse of wings : ♂ 22 mm ; ♀ 16 mm.

6 ♂♂, 1 ♀ from north side of Choiseul Island, Solomons, December 1903 (Meek).

Forewing toothed at apex and vein 6 ; hindwing at veins 4 and 7.

The ♀, which is much smaller, has the buff markings and lines better developed and darker, and a round black cell-spot in both wings ; the face is wholly white, and the palpi, which are shorter and feebler, wholly black.

16. *Epiplema vinculata* spec. nov.

Forewing : bone-colour, with fine short brown striations and some coarse scattered black atoms : first line dark brown, strongly marked, close to base, vertical from subcostal to submedian vein, bent basewards at each end, forming a bracket-shaped mark, the included basal area tinged with greyish brown in lower half ; outer line from just beyond middle of costa bent outwards and slightly angled at vein 6 and more strongly at vein 4, then inclined inwards and almost obsolete

to two-thirds of inner margin, where it is followed by a black-brown mark ; a brownish grey cloud before hindmargin from below apex to vein 3, its inner edge lunulate ; some dark streaks at anal angle ; fringe concolorous.

Hindwing : except at anal angle suffused with brownish ; a small bracket-shaped basal line, a dark brown distinctly pale-edged outer line, forming a blunt beak at vein 4 ; a brown lunulate line from upper tooth to vein 3, swollen from 5 to 3 into two blotches containing steel-blue scales, separated by a pale streak ; a broad pale streak from base along median vein below a pale black-speckled streak, joined by an oblique pale brown-edged streak on discocellular ; above the middle the outer pale line is edged with brown followed by a steel-blue streak ; anal region below vein 4 bone-coloured with some dark scattered scales.

Underside bone-colour coarsely brown speckled ; forewing entirely and hindwing along hindmargin tinged with dull brown : black cell-spots in both wings.

Vertex, antennae, thorax, and abdomen bone-colour ; basal segment of abdomen with a pair of brown spots ; the dorsum slightly brownish tinged ; face and palpi black.

Expanse of wings : 26 mm.

2 ♂♂ from Sariba Island, British New Guinea (Meek).

Both wings broad and short ; hindmargin of forewing curved, of hindwing with three blunt teeth at 4, 5, 6 ; antennae thick, with close curved clavate teeth.

FAMILY GEOMETRIDAE.

SUBFAMILY OENOCHROMINAE.

17. *Alex longipecten* spec. nov.

This species differs from *continuata* Wlk. and *aurantiata* Warr., both of which it much resembles, in having the pectinations of the ♂ antennae very much longer. The ground-colour of both wings is brownish fulvous speckled with black, the costa dotted ochreous and black, and brown-black at base ; the lines both red, the first fine, the second thickened and diffused externally, and stopping short at vein 7 ; in the hindwing the costal area is deep yellow, unspeckled ; the submarginal shade very faint ; cell-spot in the forewing only brown and diffuse.

Underside of both wings rich fulvous, with black speckling, black cell-spots, and black submarginal shades.

Abdomen and palpi beneath and the pectus the same rich fulvous ; palpi above, face, and shoulders deep brownish fulvous ; thorax paler ; abdomen red-brown.

Expanse of wings : 48 mm.

1 ♂ from New Georgia, Solomon Islands, March 1904 (Meek).

I have seen many more examples from different islands of the Solomon group, all agreeing in the ♂ antennae.

18. *Eumelea infulata* spec. nov.

Forewing : basal half ochreous whitish, thickly dusted and striated with rusty brown ; this space is limited by a broad vertical band of deep rosy, and succeeded by a similar but somewhat narrower band of pale yellow ; marginal area beyond it bright rosy with deeper striae ; a series of yellow marginal lunules between the

veins; the fringe rosy; the costa is pale throughout, without striations except towards base, where they are pale purplish.

Hindwing: the same; the basal area more suffused with rusty; the bands narrower towards inner margin; the pale band with rusty striae, a few of which are visible also in the forewing; apex whitish yellow.

Underside similar, but the basal area yellow with red striations and no suffusion.

Face, palpi, and shoulders rosy; vertex whitish, with a few red scales; patagia, thorax, and abdomen suffused with rusty; underside of abdomen blotched with rosy.

Expanse of wings: 52 mm.

1 ♀ from the south side of Choiseul Island, Solomons, January 1904 (Meek).

A very distinct and striking form, represented unfortunately by this single female.

19. *Eumelea phoenissa* spec. nov.

Forewing: wholly deep rosy, the striae being deeper than the ground-colour; the lines deep rosy, but obscure; inner line curved and marked only by a blotch above and another obliquely below the median vein; cell-spot ocelloid, deep rosy; outer line slender, oblique from inner margin just beyond middle, not curved in to costa at cell but becoming obsolete before reaching it; costa itself dull yellow with rosy and plum-coloured striae; fringe and marginal spots all deep rosy.

Hindwing: deep rosy, the basal half of costa only yellowish white; an obscure central rosy line.

Underside deep rosy, the ground-colour slightly paler.

Head, thorax, and abdomen all red; the lower part of face and palpi below marked with yellow.

Expanse of wings: 52 mm.

1 ♂ from Obi Major (Waterstradt).

This form from Obi seems to be consistently deeper and intenser red than any other.

Lissomma gen. nov.

This genus agrees with *Hypographa* Guen. in venuration of wings, notably in the anastomosis of costal and subcostal of hindwing, as well as in the prominent forehead and the uniseriate antennae of both sexes. But the eyes are not ciliated, the hindmargins of the wings are not even crenulate, while the coloration and style of markings are totally different.

Type: *Lissomma himerata* spec. nov.

The species I described as *Hypographa pallida* (Nor. Zool. ix. p. 347), identical, I believe, with *Monoctenia minuta* ♀ and *M. ozora* ♂ Swinh., A. J. M. 1902. i. p. 167), will stand as *Lissomma minuta* Swinh.

20. *Lissomma himerata* spec. nov.

Forewing: deep pink, crossed by two faint lines inwardly oblique; the first, from three-fifths of costa to middle of inner margin, straight; the second slightly curved, from just before apex to three-fourths of inner margin; the lines themselves are slightly deeper pink, edged, the first inwardly, the second outwardly, faintly with paler; fringe pink.

Hindwing: with the outer line only; the costal half of wing whitish. Underside pink; the inner margin of forewing narrowly, of hindwing broadly, whitish.

Head, thorax, and abdomen pink.

Expanse of wings: 35 mm.

1 ♀ from Eureka, N. Territory of South Australia, February 1903 (Tunney).

The insect reminds one superficially of a small *Himera pennaria*.

21. *Noreia dentilineata* spec. nov.

Forewing: rufous brown; with two olive-brown lines and a dark cell-spot; the lines dentate-lunulate, not straight as in other species of the genus; first curved, from one-fourth of costa to one-third of inner margin; the teeth on the veins pointing outwards; second from three-fourths of costa, outwardly oblique to below vein 6, then oblique inwards to two-thirds of inner margin; fringe concolorous.

Hindwing: with outer line only, curving parallel to hindmargin, at two-thirds.

Underside with cell-spots and outer lines only, these not corresponding to those of upperside but nearer middle of wing, both curved beyond cell-spot, thick, not dentate-lunulate; tufts of crimson hairs on submedian fold at two-thirds, and on hindmargin at middle.

Head, thorax, and abdomen concolorous with wings; face black-brown.

Expanse of wings: 32 mm.

1 ♂ from Cagayan Sulu (Factor).

SUBFAMILY ORTHOSTIXINAE.

22. *Desmobathra albigula*.

Eumecia albigula Warr., Nov. Zool. iv. p. 29 (1897).

This species was described from a ♂ of which the head parts were damaged. A well-preserved ♂ from the same island, Obi, has lately arrived, from which I am enabled to add the following particulars:—

Palpi externally purplish brown like the wings; face brownish yellow with two purplish spots in middle; vertex fulvous; collar and shoulders yellow.

1 ♂ from Obi Major (Waterstradt).

The species must be transferred to *Desmobathra*.

23. *Ozola convergens* spec. nov.

Forewing: whitish, dusted and speckled with grey; costa dotted with blackish; lines blackish, well defined; first strongly outcurved in middle from one-fourth of costa to one-fourth of inner margin, preceded by a fuscous shade; outer line from three-fourths of costa to two-thirds of inner margin uniformly curved inwards to submedian fold, where it closely approaches inner line and is slightly curved outwards and becomes vertical; it is preceded in its upper course and followed below the curve by a fuscous shade; a submarginal dark line parallel to hindmargin, darkest above middle of wing, followed beyond cell by a fuscous cloud to hindmargin; a row of black marginal points; fringe iron-grey; cell-spot distinct, black.

Hindwing: paler, less speckled; a black cell-spot followed by a sinuous median line blackest on inner margin, joined at vein 5 by an outer grey line from inner margin; submarginal line and marginal spots as in forewing; fringe grey.

Underside like upper.

Head, thorax, and abdomen whitish, dusted with dark grey.

Expanse of wings: 22 mm.

1 ♂ from Diyatalawa Camp, Ceylon, 4200 feet (Findlay).

SUBFAMILY DYSPHANIINAE.

24. *Dysphania flavimargo*.

Dysphania cyane ab. *flavimargo* Warr., Nov. Zool. ix. p. 350 (1902).

The aberration *flavimargo* was described from a ♀; but now that I have seen a ♂ from the same locality, Tenimber Islands, I am satisfied that the species is distinct from *cyane* Cram. In the ♂ the head, thorax, and abdomen are nearly wholly deep yellow, the purple bands of *cyane* being reduced to insignificant greyish marks. The paler interspaces of the forewings are hyaline blue, not white; the broad pale fascia before the middle of wing, interrupted above vein 1 in *cyane*, is continued obliquely inwards to middle of inner margin. In the hindwing the cell-spot is much more conspicuous, and continued the whole length of the discocellular; the yellow marginal border, which is not entire as in the ♀, but invaded by a series of dark lunules along the margin, is of a deeper, more orange shade than in *cyane* proper.

SUBFAMILY GEOMETRINAE.

25. *Agathia olivacea* spec. nov.

Forewing: pea-green, the markings in the main olive-grey; costa drab, paler along the extreme edge, with minute black marks; basal patch olive-grey; antemedian band rather broad, from subcostal vein at about one-third to inner margin at two-fifths, bent outwards on median and submedian veins and inwards immediately below median; a broad olive-grey submarginal fascia with irregular edges, really formed of striations through which the brighter green of the ground-colour appears in places; marginal area of ground-colour, forming an oblong quadrate patch between veins 5 and 7, the apex and a patch below it olive-grey; fringe olive-grey.

Hindwing: with the olive-grey area marginal, and occupying more than half of wing; a patch of bright green on margin from apex nearly to vein 4, and a smaller one within anal angle; the tooth at vein 4 slight, with a vinous marginal spot between it and vein 3; cell-spot grey, at upper end of discocellular; fringe olive-grey.

Underside whitish green; the submarginal fasciae on both wings vinous fuscous, with a blackish band on their inner edge; the inner band of forewing dark vinous; fringe pale green, tipped with brown in places.

Face and palpi above olive-grey, below whitish; fillet pale olive-green; vertex, shoulders, patagia, and dorsum bright green; thorax pale green; underside of abdomen and legs pale green.

Expanse of wings: 44 mm.

1 ♀ from the south side of Choiseul Island, Solomons, January 1904 (Meek).

26. *Agathiopsis subflavata* spec. nov.

Forewing: pale, somewhat yellowish green; costa varied with olive-brown; a red dot at base below median vein; first line obscure, indicated by rusty dots on the veins and folds and a larger spot on inner margin; a red discal spot; outer line lunulate-dentate at three-fourths, parallel to hindmargin, interrupted, dull rusty, followed by a large dull blackish pale-dusted blotch at anal angle, reaching vein 3, and a smaller blotch beyond cell not reaching margin; a row of rust-red marginal lunules, swollen into wedge-shaped marks towards costa; fringe whitish.

Hindwing: with rusty cell-spot and interrupted outer line, followed by a narrow blackish blotch at apex, and some rust-coloured spots beyond cell and at anal angle; fringe and marginal lunules as in forewing.

Underside pale green suffused with dull yellow, the only markings being the black-brown blotches of the outer line.

Face, vertex, thorax, and abdomen green; the last with pale crests, and towards anus tinged with olive brownish; palpi tinged with brownish; fillet snow-white, with a bright red line behind; abdomen beneath and legs yellowish ochreous; antennae reddish fuscous.

Expanse of wings: 44 mm.

1 ♂ from the north side of Choiseul Island, Solomons, December 1903 (Meek).

The underside alone will distinguish this species from *A. basiplaga*.

27. *Anisogamia albifimbria*.

Anisogamia albifimbria Warr., *Nor. Zool.* x. p. 262, ♀ (1903).

The ♂ differs from the ♀ of this species, first, in being slightly smaller; secondly, in having the white markings, especially towards the margins, less expressed; and thirdly the marginal lunules, which in the ♀ are brown-grey, are dark green.

5 ♂♂, 2 ♀♀ from Bougainville, April 1904, and 4 ♂♂, 2 ♀♀ from the north side of Choiseul Island, Solomons. The original type was from Isabel Island.

28. *Chrysochloroma nubecula* spec. nov.

Forewing: dull green; marked with olive fuscous transverse striae, except along two bands, antemedian and postmedian, which have a slight bluish tinge and are free from dark atoms; cell-spot black; costa white, except at extreme base; a crenulate, rust-red marginal line; fringe shining white.

Hindwing: similar.

Underside whitish green; costa of forewing ochreous; marginal line rust-red.

Upper half of face and palpi externally ferruginous red; palpi internally and lower part of face ochreous; fillet and antennae snow-white; vertex, thorax, and abdomen green; abdomen beneath and legs ochreous white; forelegs reddish in front.

Expanse of wings: 44 mm.

3 ♀♀ from Sariba Island, British New Guinea (Meek).

Resembling *C. megaloptera* Lower, from Queensland, in having no marked lines; but in that species the head, palpi, and forelegs are green and the cell-spots ferruginous.

29. *Chlorochroma imparicornis* spec. nov.

Forewing: pale green, with faint traces of five paler waved lines; three beyond middle at even distances apart, exterior and two subterminal, all parallel to hindmargin; two, basal and antemedian, more curved; costal edge white to near apex, underlined by a dull yellow streak which runs to apex; fringe pale green; no cell-spot.

Hindwing: the same, but without distinct basal line.

Underside pale green overlaid with brownish yellow, especially towards costa of forewing, which itself is conspicuously white.

Face bright brick-red; palpi pale green, tipped above with reddish; fillet white, vertex behind yellow; thorax and abdomen pale green; legs white, fore-legs in front reddish tinged; shaft of antennae snow-white; outer row of pectinations very long, twice the length of the inner.

Expanse of wings: 17 mm.

1 ♂ from Townsville, Queensland (Dodd).

30. *Chlorochroma quieta*.

Iodis quieta Lucas, *Proc. Roy. Soc. Queensland* viii. p. 79. ♂ (1892).

Cenochlora felix Warr., *Nor. Zool.* v. p. 12 (1898).

Though I have not seen a named example of *quieta* Lucas, I am satisfied that the species described by me as *Cenochlora felix* is identical.

The genus *Cenochlora* will sink; the separate origin of veins 3 and 4 in both wings is the normal structure in *Chlorochroma*.

31. *Leucodesmia confusa* spec. nov.

Like *L. chlorargyra* Wlk., from Borneo, but the silvery border on hindmargin is swollen into a triangular projection beyond cell, and at two-thirds of the costa a tooth projects outwards towards it; the silvery margin is finely edged internally with red, and the costal projection and that at anal angle are filled up with pale yellow; the head, thorax, and abdomen are all pinkish ochreous, only the shoulders and patagia being green.

Expanse of wings: 22 mm.

1 ♀ from Diyatalawa Camp, Ceylon, 4200 ft. (Findlay).

This Ceylon form is always different from the Bornean.

32. *Oenospila stellata*.

Oenospila stellata Warr., *Nor. Zool.* iii. p. 292 (1896).

This species, described originally from Fergusson Island, occurs also in Woodlark Island, in New Guinea, Sariba Island, and other places. It varies considerably both in size and clearness of markings. The types were 30 mm. in expanse, but ♂♂ occur of only 22 mm.; the average size may be put at 26 mm.; the outer line is sometimes completely red, dentate-lunulate, at others marked by red points only on veins, and at times entirely absent, except for the spots on subcostal vein and inner margin; the cell-spots are always orange-red; sometimes an inner line is indicated by a red spot on subcostal vein above the cell-spot of

forewing ; the underside of forewing is suffused towards costa with yellowish green scales.

Face and palpi externally green ; thorax and abdomen green ; fillet and antennae white.

SUBFAMILY STERRHINAE.

33. *Emmiltis placida* spec. nov.

Forewing : bone-colour, without any speckling ; lines very faint, only the median and outer visible, pale ochreous, parallel to each other ; fringe and a narrow marginal border pale ochreous ; cell-spot black and large.

Hindwing : like forewing, but the inner line antemedian, preceding cell-spot.

Underside like upper, but the forewing slightly ochreous-tinged, the costa yellowish.

Thorax and abdomen bone-colour ; collar ochreous ; vertex white ; face and palpi blackish.

Expanse of wings : ♂ 20 mm. ; ♀ 22 mm.

Both sexes from the north side of Choiseul Island, Solomons, December 1903 (Meek).

Distinguished by the extreme smoothness of the scaling.

34. *Emmiltis plenistigma* spec. nov.

Forewing : bone-colour, undusted ; the markings greyish ochreous, all curved parallel to hindmargin ; basal line very fine ; median shade slightly lunulate-dentate, from two-thirds of costa to middle of inner margin ; outer line very fine, closely followed by the broad inner submarginal shade, which is much more conspicuous than the outer ; fringe bone-colour ; no marginal spots ; cell-spot round, large, coal-black.

Hindwing : the same, but without inner line.

Underside suffused with pale grey to the submarginal line ; cell-spots blackish.

Face and palpi black ; collar brown ; vertex, thorax, and abdomen bone-colour.

Expanse of wings : 24 mm.

1 ♀ from New Georgia, Solomons, March 1904 (Meek).

Easily recognised by the very large black cell-spots.

35. *Perixera ustipennis* spec. nov.

Forewing : dull brick-red ; the markings and shading dull black ; costa deep bronzy black, somewhat metallic ; first line from one-fourth of costa to one-third of inner margin, cloudy and diffuse ; median shade, equally thick and diffuse, a little beyond middle ; outer line from two-thirds of costa to three-fourths of inner margin, fine, lunulate-dentate, slightly oblique outwards to vein 4, then incurved ; cell-spot minute, white, in a blackish cloud ; a blackish cloud from lower end of cell between veins 2 and 4 to hindmargin at end of vein 2 ; an irregular blackish blotch on margin below apex to vein 5, through which, as also through the lower cloud, a waved submarginal line is visible ; slight marginal spots between veins ; fringe dark grey, paler in middle.

Hindwing : with the whole area below vein 4, including the cell and space

beyond as far as outer line, suffused with black; the dentate black outer line is visible above middle; cell-spot silvery white; fringe reddish above middle, grey below.

Underside uniform dull brick-red, with faint traces of the lines.

Face and palpi deep red, palpi beneath yellowish; vertex brown-red, paler in front; collar blackish; shoulders and patagia brick-red, these, as well as the collar and vertex, with metallic lustre, like costal streak; thorax and abdomen dull brick-red; forelegs red in front.

Expanse of wings: 44 mm.

1 ♂ from New Georgia, Solomons, March 1904 (Meek).

Hindlegs long; the tibiae with a pair of short terminal spurs and no femoral tuft; fore femora with a pencil of white hairs.

Hindwing with decided elbow in middle of hindmargin.

56. *Stibarostoma pulverata* spec. nov.

♂. *Forewing*: pale ochreous grey, somewhat thinly scaled, but thickly and finely dusted with grey, the veins showing slightly darker; the wing is crossed by four thick bands, faintly darker grey than the ground-colour, a basal curved, a postmedian from two-thirds of costa incurved below middle to one-half of inner margin, a submarginal parallel to hindmargin and a marginal; the costal streak is also of the same grey; cell-spot linear, grey; marginal dots minute, between and at end of veins; fringe paler grey.

Hindwing: the same, but without basal band, and the marginal band reduced in breadth but darker.

Underside pearly grey, tinged with rosy on forewing.

Head, thorax, and abdomen pearly grey, the face and vertex whiter; palpi externally rosy tinged; lateral red patches on third and fourth segments of abdomen; forelegs rosy in front.

In the ♀ the bands are broader and somewhat darker, all with very faint small dots on the veins.

Expanse of wings: ♂ 26 mm.; ♀ 28 mm.

A pair, apparently bred, from Townsville, Queensland (Dodd).

SUBFAMILY HYDRIOMENINAE.

Paragramma gen. nov.

Forewing: short and broad; costa arched at base and convex before apex; apex and hindmargin rounded, the latter slightly crenulate.

Hindwing: hindmargin well rounded, crenulate; anal angle well expressed.

Antennae (♀) simple; palpi short, porrect, terminal segment blunt; tongue and frenulum present.

Neuration: forewing, cell two-fifths of wing; discocellular vertical; vein 2 at two-thirds; 3 close before 4; radials normal; 7, 8, 9 stalked from before end of cell; 10, 11 stalked, anastomosing strongly with 8, 9; 11, 10, 8, 9 separating only towards costa; areole quite small, single; hindwing, costal and subcostal anastomosing for only half of cell; 6, 7 hardly stalked; discocellular oblique, radial from the centre.

Type: *Paragramma mimula* spec. nov.

Characterised by the short cell, and short, simple areole,

37. *Paragramma mimula* spec. nov.

Forewing: greyish ochreous, but the ground-colour is almost obscured by fuscous suffusion and markings; basal two-thirds suffused with fuscous and crossed by numerous dark waved lines, the ordinary pale space between basal patch and central fascia not marked; outer edge of central fascia with two prominent teeth between veins 2 and 4, followed by a pale band of ground-colour, which emits a pale streak to hindmargin between 3 and 4, interrupting the dark marginal area, through which a very fine waved pale submarginal line is visible; a black marginal festooned line, swollen between the veins; fringe fuscous, with a paler line at base; cell-spot diffuse, dark.

Hindwing: in the basal half pale, crossed by four parallel dark lines, the last followed by the pale band; marginal half dark, uninterrupted.

Underside of both wings yellow to outer line, which is black and thick, followed by a white band, representing the pale band of upperside; marginal area black, with square white blotches at apex and below middle; cell-spots black.

Head and thorax a mixture of ochreous and fuscous; abdomen pale grey, darker along dorsum; abdomen beneath, pectus, and legs yellow; forelegs in front black.

Expanse of wings: 36 mm.

1 ♀ from Bougainville, Solomon Islands, May 1904 (Meek).

The under surface is a remarkable reproduction of that of some of the species of *Hypochroma*.

SUBFAMILY TEPHROCLYSTIINAE.

38. *Eucymatoge rigida*.

Eupithecia rigida Swinh., *Tr. E. S.* 1892. p. 2. pl. 1. fig. 6, ♂.

Three specimens of this distinct insect have been sent by A. S. Meek from Bougainville, Solomon Islands, taken in April 1904, differing in nothing from the Khasia insect. The areole is double, vein 11 rising far back; and the species must be placed in *Eucymatoge*.

39. *Rhinoprora ochriplaga* spec. nov.

Forewing: ochreous, washed with olive-grey; the markings blackish; the veins minutely dotted with black scales; the basal patch small, angled in cell, followed by a similarly angled pale band divided by a central dark line, the inner half being pale ochreous, the outer dull pearl-grey; outer edge of central fascia at two-thirds, irregularly and minutely waved outwards and dentate inwards to vein 4, then incurved; the inner third of central fascia is darker than the outer portion and edged by a black line followed by a pearl-grey one; the outer two-thirds divided by a pale line; band beyond central fascia pearl-grey with a central line; submarginal line pearl-grey, thick, obscurely lunulate-dentate, edged inwardly with blackish, and with black blotches at costa, beyond cell, and above inner margin; marginal area dark, with slight pale patch between veins 3 and 4; a dark interrupted marginal line; fringe grey chequered with darker.

Hindwing: blackish grey, except a quadrate patch of ochreous at anal angle, with three dark waved lines across it, antemedian, postmedian, and submarginal.

Underside uniform purplish grey, with the markings showing darker, the costa beyond the middle with paler patches.

Head and anal half of abdomen brownish ochreous; thorax and basal half of abdomen blackish; legs broken off; frontal tuft and palpi externally blackish

Expanse of wings: 20 mm.

1 ♂ from Sariba Island, British New Guinea (Meek).

SUBFAMILY ASTHENINAE.

40. *Acolutha imbecilla* spec. nov.

Forewing: whitish, above the middle dusted with lilac-grey; crossed by four yellow bands which in the upper half are slightly fulvous-tinged; one close to base, obscure; the second, antemedian, slightly curved; the postmedian and submarginal outcurved above; all these bands are preceded by an obscure fine line, so as to appear double; the hindmargin and inner margin near anal angle are somewhat dusted with lilac scales; cell-spot black; fringe yellowish white.

Hindwing: with three yellow bands slightly mixed with lilac scales.

Underside whitish; the costal half of forewing lilac-brown.

Face, vertex, and shoulders white mixed with lilac scales; thorax and abdomen more purely white; antennae annulated lilac and white.

Expanse of wings: 16 mm.

2 ♂♂ from Mt. Wuchi, Hainan, May 1903.

This and the next species *semifulva* are dwarf representatives of the two Indian species *pictaria* Moore and *pulchella* Hmps.

41. *Acolutha semifulva* spec. nov.

Forewing: bright orange fulvous above median vein and vein 4, yellowish white with a greenish tinge below, becoming white along hindmargin; a submarginal partially double dark olive-fuscons line, forming a blotch on submedian fold, more or less obsolete above middle, ending on the costa in two pale outwardly oblique streaks, to which the two arms are retracted; no distinct traces of other cross lines; some olive-green scales beyond middle on the submedian fold; cell-spot small, black; fringe fulvous above, pale below middle.

Hindwing: cream-colour, grey-speckled, crossed by four cloudy and irregular bands, the antemedian and median pale olive-green accompanied by yellow scaling, the two outer more curved, olive-fuscons accompanied by violet-grey scales; cell-spot black; the two middle bands are indistinctly double; some dark scales along hindmargin towards anal angle.

Underside of forewing like upper but duller, the dark submarginal band preceded by a curved pale band; outer half of hindwing, except extreme hindmargin, occupied by a large olive-fuscons blotch.

Head, antennae, and forelegs bright fulvous; thorax bright white; abdomen whitish with slight grey bands.

Expanse of wings: 17 mm.

1 ♂ from Mt. Wuchi, Hainan, May 1903.

42. *Pseudasthena grataria* ab. *marginata* nov. and ab. *perflava* nov.

Of three males of this species from Sariba Island, British New Guinea, sent by A. S. Meek, one is typical, the other two aberrant: in *marginata* the red is intensified

and the yellow intervals hardly visible ; in *perflava* exactly the opposite conditions prevail ; the forewing is suffused with yellow slightly flushed with reddish and the lines stand out distinct and purplish black or dull red, with the cell-spot large and black, the yellow hindmargin and fringe not forming a contrast with the ground-colour ; in the form *marginata* the red deepens into purplish black before the yellow hindmargin in both wings, and in the forewing a purplish black streak runs from base along the centre of wing, widening to the end of vein 4 ; in the hindwing of *perflava* the red ground-colour remains typical, but the central fascia is filled up with purplish black.

SUBFAMILY TRICHOPTERYGINAE.

43. *Crypsimetalla fimbriata* spec. nov.

Forewing : olive-grey, the slightly darker basal two-thirds limited by a straight oblique line and containing a very obscure dark cell-spot ; along the costa the ground-colour is yellowish with fine black striation ; fringe dark grey, with irregular yellow chequering.

Hindwing : grey, with an obscure darker median fascia and outer border.

Underside yellow, mottled with purple-brown and spangled with silvery scales ; a large triangular brown space on middle of costa irregularly spangled ; an oblique line of silvery spots along hindmargin, these towards apex elongated ; some brown spots at base also spangled ; the inner margin of forewing is blurred greyish brown ; of hindwing enlarged and filled up beneath with a bed of long rough hairs, dark brown at the anal angle, where they project as a tuft.

Head and thorax purplish brown varied with yellow ; abdomen yellow speckled with brown ; legs and antennae also yellow with brown speckling.

Expanse of wings : 10 mm.

1 ♂ from Bougainville, Solomons, May 1904 (Meek).

Distinguished from *C. aurata* Warr., which it otherwise resembles, by the hairy inner margin of hindwing and the darker mottled underside of wings.

44. *Crypsimetalla flava* spec. nov.

Forewing : yellowish buff, with slight dark freckling ; costa with minute black dots ; a fulvous streak along costa at base ; traces of a vertical line at one-fourth, generally obsolete ; a grey line at three-fourths, strongly outcurved above middle, touching at middle a diffuse irregular grey blotch at end of cell ; fringe dark grey, finely interrupted by slender dashes of pale ground-colour beyond veins, more widely at vein 4 and anal angle.

Hindwing : with a diffuse grey band from end of cell towards anal angle ; fringe yellowish, except along the excision between veins 4 and 6, and there dark grey.

Underside deep yellow with brown speckles ; both wings with a patch at base of costa and a somewhat interrupted median band of dark brown scales coarsely spangled with silvery ; a silvery submarginal blotch on each side of vein 6.

Head, thorax, and abdomen yellowish buff ; the base of shoulders and patagia brown.

Expanse of wings : 16—17 mm.

1 ♂, 8 ♀ ♀ from the north side of Choiseul Island, Solomons, December 1903, and 1 ♀ from Bougainville, April 1904 (Meek).

45. *Holorista dentatilinea* spec. nov.

Forewing: pale green, with the lines crossing it strongly angled; basal patch edged by a vertical purple line, toothed outwards on the veins, with an olive-green line inside it; central fascia with a single purple line on its inner edge, inwardly angled on the two folds, and three strongly dentate thick purple lines forming its outer edge; cell-spot linear, oblique, purple, touching the single line; band preceding fascia with two olive-green lines, angled like the inner edge of fascia; ban, following it with a single olive-green dentate line; a double green line preceding submarginal pale line, each arm marked with purple below vein 6; marginal area darker green, with purple marginal spots on veins, preceded by a line forming purplish angles between the veins; fringe pale green beyond veins, grey between.

Hindwing: dark grey, the basal flap quite small, the outer lobes not conspicuous.

Underside dull olive-green, becoming blackish at hindmargin of hindwing.

Vertex, face, and palpi olive-green; a white line behind vertex; thorax and patagia green; antennae black; abdomen greenish ochreous; a slight lateral tuft of hairs from second segment; hindtibiae slightly twisted, ochreous grey; no pencil of black hair from base of wing.

Expanse of wings: 26 mm.

2 ♂♂ from Bongainville, Solomons, May 1904 (Meek).

Like *Hol. fasciata* Moore, distinguished by the strongly angulated lines.

SUBFAMILY DEILINIINAE.

Ctenistochlora gen. nov.

Like *Aplochloa* Warr., but the antennae of the ♂ are bipectinate for two-thirds instead of being simple; the hindwing has the hindmargin visibly crenulate, and bluntly but decidedly elbowed at vein 4; in *Aplochloa* the hindmargin is evenly rounded.

The antennae of the ♀ are simple; in *Chloroctenis*, an African genus, the ♀ has the antennae pectinated like the ♂.

In neuration *Ctenistochlora* practically agrees with *Aplochloa*, the only difference being very slight; in the latter genus 10 and 11 arise coincidently from the stem of 7, 8, 9; in the former they arise separately from the same point as 7, 8, 9.

Type: *Ctenistochlora fallax* Warr. (*Aplochloa*).

46. *Ctenistochlora fallax*.

Aplochloa fallax Warr., *Nor. Zool.* x, p. 268, ♀ (1903).

The type was a ♀ from Isabel Island; of three specimens from Bougainville two are ♂♂ with pectinated antennae, but otherwise agreeing with the ♀.

These examples were taken by A. S. Meek April 1904: also two ♀♀ from the north side of Choiseul Island December 1903.

SUBFAMILY ABRAXINAE.

47. *Abraxas interpunctata* spec. nov.

Forewing: cream-white, the markings dull black; costa and hindmargin black; the costal streak interrupted towards base by two white spots; an oblique black

streak from before middle of costa to inner margin close to base : a brownish black fascia at three-fourths, somewhat incurved at middle and narrowing towards inner margin, the edges rounded on veins, as if consisting of coalescent spots ; internally this fascia touches a large irregular blackish cell-spot with deep black centre ; externally it is connected with hindmargin by a bar along vein 4, and on submedian fold it touches an angular projection of the marginal border ; in the central pale area a little before its middle an irregular patch of dark scales stands on inner margin, another on submedian fold, and some dots at origin of vein 2.

Hindwing : with the submarginal fascia evenly curved and of equal width throughout, the marginal border touching it on vein 4 and on submedian fold ; a median line indicated by blotches on inner margin, submedian fold, the top of discocellular and more broadly on costa ; sometimes another spot on inner margin before middle and one in cell near base.

Underside like upper ; the costa of hindwing irregularly blackish.

Face yellow with a dark central spot ; vertex black ; shoulders and patagia yellow, with black tips ; thorax and abdomen yellow with large black dorsal spots and a double series of lateral spots ; abdomen below and femora yellow ; the legs fuscous.

Expanse of wings : 40 mm.

2 ♂♂, 1 ♀ from Cagayan Sulu (Cator).

Nearest to *A. triseriaria* H. S. ; distinguished from all the allied species by the central series of spots.

SUBFAMILY BRACCINAE.

48. *Bordeta ampliлага* spec. nov.

Forewing : like that of *floridata* Warr., but with all the five white spots very much larger, and with clearer margins.

Hindwing : with the white area still larger and more concise.

Underside like upper.

Head, thorax, and abdomen black, the last, as in *floridata*, having in the ♀ only the extreme tip and in the ♂ the last two segments yellow.

Expanse of wings : ♂ 60 mm. ; ♀ 70 mm.

4 ♂♂, 3 ♀♀ from Bougainville, Solomon Islands, April 1904 (Meek).

49. *Bursada albilunata* spec. nov.

Forewing : dull brownish black, with a narrow curved cream white crescent from three-fourths of costa to just before anal angle, its inner edge even and bluntly elbowed at middle, the outer edge waved ; fringe black.

Hindwing : with the white crescent twice as broad, the inner edge slightly curved.

Underside like upper.

Face brown with the cheeks yellow ; throat yellow ; vertex and thorax black ; abdomen yellow with black rings swollen on dorsum so that the basal half becomes black ; legs blackish.

Expanse of wings : 45 mm.

1 ♀ from Obi Major (Waterstradt).

50. *Bursada conjunctiva* spec. nov.

Forewing: yellow; the costa and hindmargin black; this last wider at apex and gradually narrowing, with waved edge, to anal angle; two broad black fasciae; the first from one-sixth of costal streak, which it touches at a point, its inner edge vertical, its outer oblique; the second from two-thirds of costa, its outer edge bluntly elbowed outwards on vein 3, to inner margin close before anal angle, its inner edge rounded and running into the outer edge of the basal fascia on vein 1.

Hindwing: yellow, with a blotch at base; the costa and hindmargin black, the latter narrowing off to anal angle; a right-angled black mark at middle of inner margin, the upright arm reaching origin of vein 3, pointing towards a black blotch depending from costal streak half-way across the discocellular.

Underside like upper.

Face, palpi, throat, sides of thorax, and abdomen beneath and at sides yellow; vertex, antennae, thorax, and dorsum blackish; legs yellow and blackish.

Expanse of wings: 44 mm.

1 ♀ from Obi Major (Waterstradt).

A local form of *tricinctaria* Linn.

51. *Bursada dependens* spec. nov.

(Close to *B. excellens* Butler, of which it is evidently a different insular form.)

The forewing is practically the same as in that species; the transverse central fascia is however thicker and with straighter edges; the hindwing in the ♂ also agrees in most points with *excellens*, but there is no discal spot in the cell, and the dark costal blotch, which is generally, but not always, united with the marginal border, has its lower edge rounded; in two of the ♂♂ there is a small dark spot on the inner margin above the anal angle; in the only ♀ seen this spot is developed into a long club-shaped mark reaching lower end of cell, towards which the costal spot above is produced, so as to form a crossbar, only interrupted by half the width of the cell.

Expanse of wings: 35 mm.

4 ♂♂, 1 ♀ from the south side of Choiseul Island, Solomons, January 1904 (Meek).

52. *Bursada restricta* spec. nov.

This is also another form of *excellens* Butler, differing in several points from both it and the foregoing species *dependens*.

Forewing: costa evenly brown-black throughout; in the other two species the yellow areas touch the costa; the outer yellow fascia has lost the form of an "eagle's beak" as described by Butler, and become an oval blotch with evenly curved sides and pointed lower end, not reaching below vein 1, and edged above by the costal streak.

Hindwing: with the inner edge of the broad marginal border evenly curved (in *dependens* it is always more or less broken and angled), ending on costa at middle (in *dependens* the costal dark area reaches to one-third from base) in a narrow square-edged projection instead of the rounded and bulged ending of *dependens*.

Expanse of wings: 35 mm.

3 ♀♀ from the south side of Choiseul Island, Solomons, January 1904 (Meek).

The ♂ will probably be yet more different; though taken at the same time and locality as the examples of *dependens* mentioned above, the present specimens undoubtedly represent a distinct form.

53. **Bursadopsis sectinota** spec. nov.

Closely related to *B. basalis* Warr. from Obi, but differing as follows: instead of the single small orange spot in the cell of the forewing, there are two spots, one small near base, the other larger, triangular, pointing outwards; in one example these two spots are connected below the median by a curved orange streak; the apex of the antennae is white, not yellow. .

Expanse of wings: 44 mm.

2 ♂♂ from Halmahera (Waterstradt).

54. **Bursadopsis waterstradti** spec. nov.

Like the last species, allied to *B. basalis* Warr., but representing another island form, which is characterised by the larger amount of orange. In the forewing the three orange spots of *sectinota* are all swollen and laterally confluent; the costa is narrowly black, with a slight tooth along the discocellular; and the large orange blotch of the disc is connected below by a narrow neck with a blotch at the anal angle. In the hindwing the orange area is likewise ampler, the black marginal border being correspondingly diminished. The patagia are yellow, having only the extreme tips black.

Expanse of wings: 44 mm.

1 ♂ from Batchian (Waterstradt).

55. **Craspedosis albistriata** spec. nov.

Forewing: black, with a broad central curved white band from inner margin to above vein 6, the outer edge projecting at vein 4 and the apex forked; a faint curved submarginal line, indicated by spots of white striae on the veins, largest on veins 1, 3, and 6; some white transverse striae from base along median vein and a few on submedian; a very fine black cell-mark; the inner margin narrowly black at base of fascia.

Hindwing: with the fascia entire from costa to inner margin, and swollen externally in the middle; the rest as in forewing.

Underside similar; the fascia broader and purer white; the submarginal line of forewing and the streak from base along median vein stronger.

Head, thorax, and abdomen black; centre of face, base of shoulders and patagia, segmental rings of abdomen, and the anal tuft yellow; legs slate-colour.

Expanse of wings: 56 mm.

2 ♀♀ from Batchian (Waterstradt).

Nearest to *C. sybilla* Warr. from Halmahera.

SUBFAMILY ASCOTINAE.

56. **Ascotis margarita**.

Ascotis margarita Warr., *Nov. Zool.* i. p. 435 (1894). W. Java.

Blepharactenucha albescens Warr., *Nov. Zool.* iii. p. 400 (1896). S. Java.

I have just discovered that, through an unfortunate oversight, I have described this species twice. It will stand as *Ascotis margarita*.

57. *Catoria subalbata* spec. nov.

Forewing : white, speckled, and along costa and hindmargin suffused with olive-grey ; basal patch hardly defined, grey tinged, crossed by three series of spots on veins, the limiting line and the one preceding it starting from blackish costal spots ; median shade starting as a dark spot just before middle, embracing the cloudy round black cell-spot, and ending in a grey spot before middle of inner margin, interrupted between ; outer line double, at two-thirds, excurved parallel to hindmargin, the inner arm marked by grey vein-spots, the outer consisting of grey lunules ; the whitish submarginal line preceded by a row of dark grey partially confluent spots between the veins, and followed by olive-grey blotches on the veins, paling to margin ; marginal spots black and large ; fringe grey.

Hindwing : similar, but without basal markings ; cell-spot round, large, olive-grey, preceded by an interrupted median line.

Underside white, unspeckled ; forewing with apical third smoky black, the apex slightly and a spot on margin below vein 4 more distinctly whitish ; cell-spot large and black ; costa marked by black spots at the beginning of the lines ; base greyish ; hindwing with grey cell-spot, and partial grey submarginal line, interrupted below middle ; marginal lunules conspicuous.

Head, thorax, and abdomen white varied with olive-grey ; tips of shoulders, outside of palpi, and forelegs blackish.

Expanse of wings : 48 mm.

1 ♂ from Dili, N.E. Sumatra.

58. *Chogada alienaria* ab. *nigrifasciata* nov.

Central area of both wings pure white with slight grey or brown scaling ; the two arms of inner line filled in, sometimes very broadly, with velvety brown-black ; outer line followed by a deep velvety black band diffused outwardly and partially obliterating submarginal line.

Underside of both wings with a broad black submarginal fascia limited inwardly by the outer line ; the cell-spots large and black, and the inner band of forewing showing through.

1 ♂, 1 ♀ from Diyatalawa, Ceylon, 4200 ft., October—December 1901 (Findlay) ; received with numerous examples of the ordinary type form.

59. *Chogada decisaria* ab. *nigristigma* nov.

Of six examples, all of sandy grey coloration, of *decisaria* Wlk. (= *lichenina* Butler, = *callicrossa* Meyr.), two represent a form different from any hitherto described, having the ocelloid spot of both wings developed into a diffuse round smoky black blotch. For these the above name is proposed. They were all taken December 1903 by A. S. Meek, on the north side of Choiseul Island, Solomons.

SUBFAMILY SELIDOSEMINAE.

60. *Uranodoxa longicornis* ab. *maculata* nov.

Smaller than typical *longicornis* Butler, and apparently darker, as all three ♀♀ which I have seen are as dark, at all events in the forewing, as the ♂♂ of the type form ; they are distinguished at once by two bright yellow lunules placed on the

two folds, immediately before the deep red outer band of the forewing. All three are from the same island of the Solomon group.

Bougainville, taken in May 1904 by A. S. Meek.

SUBFAMILY FIDONIINAE.

61. *Chiasmia maculilinea* spec. nov.

Forewing: pale yellow; the markings brown, generally consisting of spots; a blotch at base of costa and another at one-fourth, with four smaller spots below, two on submedian fold and one each on the median and submedian veins; cell-spot round and brown, followed closely by a continuous sinuated median line, angled outwards on subcostal vein and bent inwards below median to one-third of inner margin; outer line formed of spots on veins, that on vein 5 close to median shade, those on vein 2 and the submedian fold touching it; submarginal line consisting of irregular blotches between the veins, the two at costa, the two beyond cell and the three lowest coalescing with each other; two brown marginal blotches between veins 7 and 4, and 3 and 1, and a spot on costa before apex; fringe yellow, mottled with brown except between veins 3 and 4.

Hindwing: similar, but without the basal spots; the cell-spot outside the median shade.

Underside like upper.

Head, thorax, and abdomen yellow; this last and the metathorax blotched with brown.

Expanse of wings: 22 mm.

1 ♂ from Cape Madang, S.E. Celebes, November 1901 (H. Kühn).

62. *Chiasmia minuta* spec. nov.

Intermediate, in markings, between the preceding species, *maculilinea*, from Celebes, and *radiata* Warr., *Nor. Zool.* iv. p. 82, from the Khasia Hills. The spots are swollen and more or less confluent, the submarginal line on both wings being preceded and followed by black blotches at costa, beyond cell, and below vein 3, while in the forewing the lower part of the central fascia combines with the following line to form a blotch on inner margin.

Expanse of wings: 18 mm.

1 ♂ from Bilit, North Borneo, July 1899 (Cator).

SUBFAMILY SEMIOTHISINAE.

63. *Azata fulvida* spec. nov.

Forewing: pale olive fulvous, speckled with darker; the costa yellow, finely dotted black and white; the lines brown, wavy, starting from dark costal spots; first from near base, bent in cell, then oblique; median before middle, nearer first than third; third from three-fourths of costa to three-fourths of inner margin, darker and plainer than the other two, followed by a darker tint, containing a small blackish blotch between veins 3 and 4; a brown crescent at margin before the excision; fringe (worn) concolorous(?).

Hindwing: without basal line.

Underside yellow, tinged with deeper yellow, and speckled with fuscous; both wings with a thick purplish postmedian line.

Head, thorax, and abdomen like wings.

Expanse of wings : 30 mm.

1 ♀ from Mt. Wuchi, Hainan, May 1903.

Both wings slightly elbowed at middle of hindmargin.

Distinguished above by its unusual coloration, resembling more that of *Hypergthra* and *Petrodara*.

64. *Gonodela semilutea* spec. nov.

Forewing : dark greyish fuscous, speckled with darker : the usual lines black ; first projecting above median vein, curved below ; second straight and oblique, retracted at costa ; outer line fine, angled outward but interrupted at vein 6, followed by a deeper shade running to margin from below vein 6 and by a dark blotch at costa ; the apical space paler grey ; fascia between second and outer line filled up with luteous except close along inner edge, where it is whitish and slightly flecked with grey ; cell-spot black ; fringe fuscous, with paler base beyond a dark marginal festoon.

Hindwing : with fascia running to above anal angle ; a black blotch in the dark shade between veins 3 and 4.

In both wings the luteous tint of the fascia encroaches linearly beyond the outer black line.

Underside of forewing cream-colour to the outer line with brown striae, the fascia white, the second line thick and diffuse ; hindwing yellowish ochreous, tinged with deeper yellow before the two lines ; marginal area in both wings dark brown, the forewing with a white spot above vein 6.

Head, thorax, and abdomen concolorous with base of wings ; underside of abdomen and legs cream-coloured.

Expanse of wings : 35 mm.

1 ♀ from Maymyo, Shan States, June—August 1902 (Hanxwell).

This species, distinguished by the luteous outer half of the pale fascia, seems distinct from any known Eastern form.

Iulocera gen. nov.

This genus is proposed for *Azata variegata* Warr., which is distinguished by the simple ligulate antennae reaching to quite three-fourths of the wing, and by the strongly and evenly crenulated hindmargins of the wings. *Macaria denticulata* Pag., from the Aru Islands, almost certainly belongs to the same genus, and probably, judging from the figure, *M. goramata* Rüb. from Flores.

Another species is here described from Halmageira.

65. *Iulocera albiapicata* spec. nov.

Forewing : whitish, densely sprinkled with violet-grey and fuscous atoms ; the costa yellow, with short brown striae ; lines brown or purplish, accompanied by yellow scaling, somewhat obscure ; all bent below subcostal vein, then oblique parallel to hindmargin ; first close to base ; outer at three-fourths, marked by darker spots on veins ; median shade a little before the middle, thick, nearly straight, absorbing the cell-spot ; submarginal line formed of purplish brown lunules between the veins ; space between it and outer line violet-grey ; marginal

area again paler and yellow tinged, containing a diffuse patch before apex; marginal lunules purple-brown; fringe yellow, chequered beyond veins with purplish.

Hindwing: the same, but without basal line.

Underside whiter, the speckling coarser and browner; costa of forewing and all the veins yellowish; a broad purplish brown submarginal fascia extended to margin in forewing between 4 and 6 and again at anal angle; a white apical patch and pale patch below vein 4; cell-spot dark, on the median shade; marginal lunules coalescent.

Head, thorax, and abdomen like wings.

Expanse of wings: 26 mm.

1 ♀ from Halmaheira (Waterstradt).

In several respects this species agrees with the description of *denticulata* Pag., but the undersides are different.

66. *Nadagarodes pulverata* spec. nov.

♂. *Forewing*: pale pearl-grey speckled with darker; basal half as far as median shade and lower half of marginal area suffused with fuscous brown; first line at one-fourth, median just before one-half; the first plain only on costa; the second waved, dark brown, insinuate in cell; outer line from two-thirds of costa to three-fifths of inner margin, irregularly dentate, somewhat excurved above, but approaching median shade on inner margin; a waved pale submarginal line, preceded by a dark fuscous shade and followed by another, both ending at vein 6, the apex being ochreous grey; marginal dark spots between the veins; fringe grey.

Hindwing: paler grey, with pale brown suffusion; the lines as in forewing.

Underside tawny, the lines blackish; base and costa of forewing with black striae; median line thick and black, reaching the black cell-spot; space between median line and outer line, as on upperside; this space is much paler, as well as the apex to vein 5; hindwing with the three lines dark; cell-spot within the antemedian line.

Face, vertex, and palpi dark ferruginous; thorax grey like basal area.

Abdomen pale stone-colour.

Expanse of wings: 44 mm.

♀ with the wing to outer line dove-grey dusted with darker, the two lines fine and fulvous, the basal at one-fifth incurved towards costa and inner margin, the median nearly straight, before middle; outer line not excurved, but nearly straight from two-thirds of costa to middle of inner margin, fulvous, with black vein-spots; the apex broadly, a marginal space below vein 4, the submarginal line and the centre of the brown fascia between outer and submarginal lines being all dove-grey; costa throughout pale tawny.

Hindwing: similar, the basal half pale, the line darker.

Underside as in the ♂, but the outer line straighter and followed by a black shade; apical blotch to vein 6 pale grey, but the space between median and outer line not paler than the rest of the ground-colour.

Expanse of wings: ♂ 40 mm.; ♀ 56 mm.

1 ♀, 1 ♂ from the north side of Choiseul Island, Solomon, December 1903 (Meek).

Nearest to *N. subpulchrata* Warr., from Guadalcanar.

67. *Nadagarodes purpuraria* spec. nov.

Forewing: purplish brown, overlaid in places with bluish grey scales; costa pale ochreous, dotted with black; first line blackish, from one-fifth of costa, angled below subcostal vein, then oblique to near base of inner margin, accompanied by dull orange-red scales; median line diffuse, from three-fifths of costa to before middle of inner margin, likewise accompanied by orange-red scales; outer line, blackish and distinct, from quite two-thirds of costa to beyond middle of inner margin, the interval between it and median line overlaid with pale lilac-grey scales, the dark shade beyond it being mixed with orange-red; marginal dark area tinged in places with bluish grey and traversed by an evenly waved submarginal line of the same colour; fringe (worn) brownish purple, with, apparently, a fine orange line at base.

Hindwing: with the lilac-grey fascia between the two dark lines antemedian; the rest as in forewing.

Underside dull orange, striated throughout in the forewing, and along costa only in hindwing, with purplish brown; outer line of forewing thick and brown, sinuous, the marginal area beyond it purple-brown, towards costa striated with orange; in the hindwing the line is central and nearly straight; the marginal dark area only half as wide as in forewing, with a waved orange submarginal line; cell-spots black, linear in forewing, dot-like in hindwing.

Palpi externally orange; face deep purple-brown; shoulders, patagia, and thorax purplish grey; vertex and antennae purplish, speckled with orange; abdomen purplish grey at base, becoming orange on anal segments; underside and legs orange; the tarsi purplish fuscous.

Expanse of wings: 52 mm.

1 ♂ from the south side of Choiseul Island, Solomons, January 1904 (Meek).

Nesophila gen. nov.

Forewing: arched at base and faintly curved; apex rectangular; hindmargin well curved.

Hindwing: rather narrow; anal angle rounded off; hindmargin with slight indentation beyond cell; the apical angle squarely rounded.

Abdomen of ♂ with lateral tufts; antennae simple, lamellate, flattened and subserrate; palpi upcurved in front of face, second segment fringed with hairs terminal long and pointed; tongue and frenulum present; hindtibiae with four spurs, not swollen; no fovea in forewing.

Neuration: forewing, cell less than half the length of wing; discocellular concave, the lower half oblique; first median nervule at two-thirds, second close to third; radials normal; subcostal vein depressed at extremity; 7, 8, 9, 10 stalked from the bend; 11 bent upwards and approximated to 12, but not anastomosing; hindwing, costal and subcostal shortly approximated at base; veins 3 and 7 before angles of cell; no radial.

Type: *Nesophila vulgaris* spec. nov.

Resembling *Tephropsis*, but structurally different.

68. *Nesophila vulgaris* spec. nov.

Forewing: fuscous, slightly rufous tinged; lines blackish, thick, irregularly waved; first from one-fourth of costa to one-third of inner margin, oblique out-

wards ; second from two-thirds of costa to two-thirds of inner margin, parallel to hindmargin, insinuate somewhat beyond cell and on submedian fold ; a large black cell-spot ; two cloudy fuscous submarginal shades, between which the submarginal line is obscurely visible ; fringe (worn) fuscous chequered with dark.

Hindwing : paler, more cinereous ; with the outer line and shades obscurely expressed.

Underside dull fuscous, unmarked.

Vertex and thorax fuscous ; abdomen cinereous, the lateral tufts dark ; face and palpi blackish.

Expanse of wings : 26 mm.

1 ♂ from the north side of Choiseul Island, December 1903 (Meek).

A dull and inconspicuous insect.

69. *Xenoecista persimilis* spec. nov.

Very close to *X. ochracea* Warr. (described as a *Peridela*, but better placed in *Xenoecista*) from Guadalcanar, but differing in the following particulars : the double black blotch in the submarginal line, touching the outer line, is absent, its place being taken by two faintly darker blotches, often not visible ; the median line in both wings is simple, brown, not followed by the double loop seen in *ochracea* ; the dark strong outer line in hindwing is obsolete or very faint ; the first three segments of abdomen are marked with pairs of black spots ; the cell-spots are black and distinct, and both wings are thickly dusted with black atoms : the submarginal line is represented by a series of pale spots.

Expanse of wings : 34 mm.

3 ♂♂ from New Georgia, Solomons, March 1904 (Meek).

Both species are developments of *Semiothisa* rather than of *Gonodeta*, and may be placed, for the present at all events, in the S. American genus *Xenoecista*.

SUBFAMILY ENNOMINAE.

70. *Hyposidra rauca* spec. nov.

Forewing : brownish fuscous, roughly and loosely scaled ; without markings, except a diffuse darker central shade containing the black cell-spot ; fringe concolorous.

Hindwing : similar, the shade antemedian.

Underside like upperside.

Head, thorax, and abdomen concolorous.

Expanse of wings : 40 mm.

1 ♂ from Cagayan Sulu, north of Borneo (D. Cator).

The antennae are very strongly plumose. Hindmargin of forewing without any excision, faintly sinuous, the apex rounded and slightly prominent ; hindwing with slight tooth at vein 4.

71. *Hyposidra vittata* spec. nov.

Forewing : brown-black, with a broad cream-white postmedian fascia angled on vein 3 and constricted just below it ; a small whitish apical blotch.

Hindwing : with the fascia curved ; fringes concolorous.

Underside the same, but the ground-colour brown and the fascia yellowish.

Head, thorax, and abdomen concolorous with wings.

Expanse of wings : 50 mm.

1 ♀ from Cagayan Sulu (Cator).

Nearest to *Hyposidra nigrata* Warr. from Basilan, but the fascia is twice as broad, the spot in cell absent, and the colour browner.

The venation of forewing is irregular ; vein 6, the upper radial, rising from the upper end of cell, as usual, curves downwards to hindmargin midway between 4 and 7 ; vein 5, the lower radial, starting very fine from middle of discocellular, can just be traced curving downwards to margin at the end of vein 4.

72. *Zanclopera calidata* spec. nov.

Forewing : warm ochreous, flushed with pale brown and slightly speckled ; costa pale ochreous dotted with dark, with three larger spots before apex ; first line at one-fourth, curved, very faint ; a median shade, sinuous and also very faint ; in one specimen these two lines are hardly traceable ; outer line formed by brown dots on veins, closely followed by a dull grey-brown shade, from four-fifths of costa to three-fourths of inner margin, sinuous below median, the dots plainest towards inner margin ; fringe pale brownish with darker tips.

Hindwing : similar, but without basal line ; fringe ochreous ; cell-spots in both wings faint.

Underside with paler ground, but the speckling and lines dark brown and distinct ; some dark spots before margin and beyond cell.

Head, thorax, and abdomen ochreous, the head slightly deeper ; anal segments of dorsum with a few brown scales ; legs and underside ochreous, with slight dark speckling.

Expanse of wings : 30—34 mm.

2 ♂♂ from Mt. Wuchi, Hainan, May 1903.

Very near to *Z. falcata* Warr. from the Khasias ; the hindmargin of forewing straighter, the apex less falcate ; no black spot on inner margin.

LEPIDOPTERA COLLECTED BY W. R. OGILVIE-GRANT ON
THE AZORES AND MADEIRA IN 1903.

By W. WARREN, M.A., F.E.S.

1. *Pieris brassicae* Linn. ab. *chariclea* Stph., *Ill.* i. p. 17. t. 3. figs. 1, 2.

1 ♂, 1 ♀, Santa Cruz, Graciosa, April 22.

1 ♂, above Calheta, S. Jorge, May 7.

1 ♂, 2 ♀ ♀, above Caso do Pico, May 21.

2. *Chrysophanus phlaeas* Linn. ab. *phlaeoides* Stand., in St. & Reb., *Cat.* 512 E.

1 ♀, Rabçal, Madeira, June 7.

3. *Agrotis atlantica* spec. nov.

Forewing: red-brown, varying in depth of tint; the ordinary lines obscured across wing, but marked on costa by double dark spots; orbicular stigma round, of ground colour, slightly paler than the cell on each side of it; reniform filled up with grey, darker in lower half; both slightly edged with pale; a slight dark mark on costa before submarginal line, which is followed there by a few grey scales; obscure grey-brown marginal lunules; fringe grey-brown.

Hindwing: dull smoky buff, with a black submarginal fascia thinning out towards anal angle; base and inner margin clouded with darker; a grey cell-spot; extreme hindmargin and fringe buff; marginal line broad, reddish.

Underside pale fawn, with a slight reddish tinge; the whole of the forewing, except costal streak and the hindmargin broadly, bronzy dark grey, with the nervules showing pale at the edge; outer line on costa purplish; hindwing with cell-spot and postmedian line purplish; the submarginal fascia slight; fringe pale buff.

Thorax, patagia, and tips of shoulders concolorous with forewing; abdomen smoky grey like inner margin and base of hindwing, the segmental rings and anal segment paler; shoulders, head, and apex of palpi fawn-colour like underside; palpi externally and legs red-brown, with pale scales intermixed; underside of abdomen and the pectus smoky fawn-colour.

Expanse of wings: 52 mm.

A series from—

Reguinbo, Terceira, April 6.

Praya, Graciosa, April 29.

Above Calheta, S. Jorge, May 3–9, *type*.

In shape of wings like *A. pronuba* Linn., and superficially resembling *T. baja* Fab., but distinguished by the smoky buff hindwings.

4. *Agrotis c-nigrum* Linn.

A series from—

Reguinbo, Terceira, April 5.

Above Calheta, S. Jorge, May 3.

5. *Agrotis pronuba* Linn.

- 1 ♂, above Horta, Fayal, May 24.
1 ♀, Caso do Pico, May 23.
2 ♀♀, above Magdalena, Pico, May 17.

6. *Agrotis saucia* Hübn.

A series from —

- Reguinho, Terceira, April 5, 6.
Above Calheta, S. Jorge, May 3, 4, 7, 9.
Below Pico, April 15.
Above Magdalena, Pico, May 17.

7. *Agrotis segetum* Schiff.

- 1 ♂, Reguinho, Terceira, April 5.
1 ♀, Poizo, Madeira, February 20.

8. *Melanchra granti* spec. nov.

Forewing: reddish brown; a dark brown dash from base below median vein; orbicular stigma flattened, elongate, slightly paler, with dark brown edging; the cell before and beyond it darker brown; reniform oblong, quadrate, filled in with white scales edged by dark brown; lines in the single specimen obliterated in the main: the outer line is squarely produced beyond cell, incurved below middle to below inner edge of reniform stigma, then vertical; fringe concolorous, with paler base.

Hindwing: paler, with faintly darker cell-mark and dentate postmedian line.

Underside like upperside of hindwing, without markings except cell-spots and postmedian lines.

Head and thorax like forewing; abdomen like hindwing; palpi darker brown.

Expanse of wings: 38 mm.

- 1 ♂, above Caso do Pico, 1000 ft., May 21.

9. *Leucania unipuncta* Haw

A series from

- Reguinho, Terceira, April 5, 6, 9.
Sta. Cruz, Graciosa, April 22.
Praya, Graciosa, April 29.
Above Calheta, S. Jorge, May 3, 4.
Above Sta. Cruz, Flores, April 16, 17.
Above Horta, Fayal, May 24.
Above Caso do Pico, May 21.
Above Magdalena, Pico, May 17.

10. *Brotolomia meticulosa* Linn.

A series from —

- Reguinho, Terceira, April 5, 6.
Praya, Graciosa, April 29.
Above Calheta, S. Jorge, May 3, 4.

11. *Brotolomia periculosa* Guen. ab. *interrupta* nov.

In his paper on the Lepidoptera of Madeira in the *Transactions of the Entomological Society of London* for 1891, p. 208, Mr. Baker quotes this North American species and the aberration *brunnea* as occurring there. The type-form probably occurs also in the Azores; but Mr. Grant brought back only an aberration, for which, as differing from the form *brunnea* Grote, I propose the name *interrupta*. In this the dark central fascia containing the two stigmata, which in *brunnea* is entire and continued through to inner margin, is abruptly cut off close below vein 2, only the limiting lines remaining to mark its course, and these in the ♀♀ only. The prevailing tint in the ♂♂ is much redder than in the ♀♀, and the markings more or less obliterated.

2 ♂♂, 2 ♀♀, May 1903, above Calheta, S. Jorge.

12. *Thalpochares ostrina* Hübn.

A series from—

Ponta Delgada, S. Miguel, March 26.

Santa Cruz, Graciosa, April 22.

Above Magdalena, Pico, May 19.

13. *Hypena obsitalis* Hübn.

A series from—

Reguinho, Terceira, April 6.

Santa Cruz, Graciosa, April 22.

Praya, Graciosa, April 29.

Above Caso do Pico, May 21.

14. *Microloxia nubigena* Wollast.

11 ♂♂, Rabaçal, Madeira, June 6.

15. *Cosymbia maderensis* ab. *irrufata* nov.

The type-form of this species was described by Mr. Baker (*Tr. E. S.* 1891 p. 216) as "finely and densely irrorated with rough pinkish scales." Of 12 examples taken by Mr. Ogilvie-Grant, at Rabaçal, Madeira, in June 1903, 5 ♂♂ agree with the type-form. The remaining 7 (6 ♂♂, 1 ♀) have no red tint whatever; they are simply pale ochreous dusted with grey, and the cell-spots in most cases are strongly edged or quite filled up with deep black. The dots on veins marking the submarginal and marginal lines are black and conspicuous, and the basal line is also marked by three black spots. The dark median shade is well marked in the ♀, but hardly expressed in the ♂♂.

Mr. Baker gave 26 mm. as the expanse of wings; and with this the ♀ agrees, but the ♂♂ are larger, reaching 30 mm.

16. *Cosymbia pupillaria* Hübn.

A series from—

Reguinho, Terceira, April 6.

Sta. Cruz, Graciosa, April 22.

Caldeira, Graciosa, April 27.
 Above Calheta, S. Jorge, May 2-10.
 Above Caso do Pico, May 21.
 Central Fayal, May 26.
 Caldeira, Fayal, May 27.

17. *Sterrha rutaria* ab. *maderae* Baker.

1 ♀, Rabacal, Madeira, June 6.

18. *Coenocalpe custodiata*.

Eubolia custodiata Guen., *Phal.* ii. p. 491 ♂.

Among the insects collected in the Azores by Mr. Grant are large numbers of this North American species, previously described from Madeira by Wollaston as *Coremia centrostrigaria*. In Staudinger and Rebel's catalogue *latirupta* Wlk. and *luscinata* Zell., both names for the American insect, are rightly made synonyms of *centrostrigaria*, which name is retained for the species, but Guenée's name *custodiata* for his Californian specimens really antedates Wollaston's by a year.

A series from—

Almagreira, Sta. Maria, February 27.
 S. Pedro, Sta. Maria, March 2.
 Ponta Delgada, S. Miguel, March 26.
 Reguinho, Terceira, April 6.
 Sta. Cruz, Graciosa, April 22.
 Praya, Graciosa, April 29.
 Above Calheta, S. Jorge, May 5.
 Below Pico, May 15.
 Above Magdalena, Pico, May 19.
 Above Horta, Fayal, May 24-28.

19. *Coenocalpe obstipata* Fab.

A long series from —

Almagreira, Sta. Maria, February 27.
 S. Pedro, Sta. Maria, March 2.
 Lameiro, S. Miguel, March 8.
 Furnas, S. Miguel, March 14-18.
 Sete Cidades, S. Miguel, March 22.
 Reguinho, Terceira, April 6.
 Flores, April 19.
 Sta. Cruz, Graciosa, April 22.
 Praya, Graciosa, April 29.
 Above Calheta, S. Jorge, May 2-10.
 Above Caso do Pico, May 21.
 Above Horta, Fayal, May 24-28.
 Central Fayal, May 26, 27.
 Caldeira, Fayal, May 26.

20. *Xanthorhoë inaequata* spec. nov.

♂. Forewing: fuscous-drab, smooth; the central fascia darker, blackish; the basal patch and this fascia are both edged with wavy whitish lines; and both alike as well as the intervening band and the broad marginal area are traversed by parallel wavy dark lines, as in *Campptogramma*: a small dark cell-spot; submarginal line very fine, whitish; pairs of dark marginal dots; fringe concolorous.

Hindwing: without basal markings, and all the others obscure; fringe whitish. Underside grey, darker to outer line, which is whitish.

Head, thorax, and abdomen smooth, fuscous.

♀ larger and longer, always with a rufous tinge: in some instances altogether rufous with the central fascia coloured like the rest.

Expanse of wings: ♂ 30 mm.; ♀ 34 mm.

In numbers from various islands of the Azores.

Type from above Calheta, S. Jorge, May 7.

21. *Xanthorhoë rupicola* Wollast

8 ♂♂, 2 ♀♀, Rabçal, Madeira, June 6.

22. *Chloroclystis* spec. ?

1 ♂, Rabçal, Madeira, June 6.

23. *Tephroclystia latipennis* spec. nov.

Forewing: grey-brown, dusted with dark and pale scales; the veins dotted blackish and whitish; costa with grey streaks, oblique outwards before, and inwards beyond middle; the three principal lines double and thick, pale brown with a grey line in middle; the inner very obscure, but apparently bent in middle; the second containing the dark cell-spot; the third outcurved from 6 to 2 and pale grey; submarginal line whitish, dentate, with black teeth between veins; a black marginal line interrupted at the ends of the veins by pale brown spots; fringe dark grey.

Hindwing: dark grey towards inner and hind margins, whitish towards costa, without any brown colouring; the outer lines and cell-spot dark.

Underside pale ochreous, in the forewing overlaid with fuscous; cell-spot black; the lines marked black on costa; the outer lines across the wing: hindwing, with black cell-spot and outer lines.

Head, thorax, and dorsum grey-brown; abdomen beneath ochreous; palpi dark fuscous.

Expanse of wings: 26 mm.

1 ♀ from Rabçal, Madeira, 3600 ft., June 8th, 1903.

24. *Tephroclystia ogilviata* spec. nov.

Forewing: brown mixed with paler scales, without distinct markings; traces of a darker central area edged inwardly by a deeper nearly vertical band, and outwardly by an oblique one; also an indistinct submarginal shade,

Hindwing: the same, with the outer band only.

Underside paler, with the markings rather more definite, and traces of an obscure cell-spot.

Face and palpi dark brown: thorax and abdomen like wings.

Expanse of wings: 16 mm.

1 ♂ from Central Fayal, Azores, 2500 ft., May 1903.

Wings narrow and elongate. A species standing by itself: it is unfortunate that only one specimen, and that worn, should have been secured of this distinct species.

25. *Scotorithra fortunata* Blachier.

A series from—

San Pedro, Sta. Maria, March 2.

Lameiro, S. Miguel, March 8–10.

Furnas, S. Miguel, March 14–18.

Reguinho, Terceira, April 6.

Sta. Cruz, Graciosa, April 22.

Rabaçal, Madeira, June 6.

26. *Pyralis farinalis* Linn.

2 ♂♂, above Horta, Fayal, May 24.

27. *Udea ferrugalis* Hübn.

A series from—

San Pedro, Sta. Maria, March 2, 3.

Ponta Delgada, S. Miguel, March 26.

Reguinho, Terceira, April 6–8.

Sta. Cruz, Flores, April 19.

Sta. Cruz, Graciosa, April 22.

Praya, Graciosa, April 29.

Above Calheta, S. Jorge, May 7.

Below Pico, May 15.

Above Magdalena, Pico, May 13–19.

Above Capo do Pico, May 21.

Above Horta, Fayal, May 24.

28. *Udea numeralis* Hübn.

1 ♂, 1 ♀, Furnas, S. Miguel, March 14–18.

1 ♂, Reguinho, Terceira, April 6.

29. *Scoparia aequipennalis* spec. nov.

Forewing: almost wholly suffused with blackish fuscous: the two lines whitish, the first slightly oblique outwards, followed by a darker shade containing the orbicular and claviform stigmata; the outer curved parallel to hindmargin, somewhat crenulate and indented above and below middle, preceded by a dark

shade containing the reniform stigma; the stigmata sometimes slightly filled up with dark ochreous; two slight white patches in the marginal space; fringe grey, dark fuscous at base, beyond a crenulate white line preceded by a black one.

Hindwing: wholly dark fuscous.

Underside glossy dark fuscous; hindwing rather paler, with traces of a dark submarginal line.

Head, thorax, and abdomen dark fuscous; lower half of face whitish.

Expanse of wings: 16 mm.

Nearest to some of the St. Helena species.

A series from—

Ponta Delgada, S. Miguel, March 26.

Crater above Reguinho, Terceira, April 6; *type*.

Santa Cruz, Flores, April 19.

Caldeira, Graciosa, April 27.

Above Calheta, S. Jorge, May 2-9.

Below Pico, May 15.

Central Fayal, May 25.

Above Horta, Fayal, May 26.

30. *Scoparia angustea* Stph.

A small series from—

Reguinho, Terceira, April 6.

Crater above Reguinho.

Caldeira, Graciosa, April 26-29.

Above Calheta, S. Jorge, May 7, 8.

Above Horta, Fayal, May 24.

31. *Scoparia coecimaculalis* spec. nov.

Forewing: brownish grey, with fuscous speckling and markings; a black dash accompanied by some dark scales at base; first line waved and slightly oblique outwards, followed by the blackish orbicular and claviform stigmata; the reniform S-shaped, edged with black: outer line crenulate, parallel to hindmargin, indented below costa; it is followed, as the inner line is preceded, by a paler brownish grey space: the dark submarginal cloud constricted or interrupted in middle; a marginal row of black spots; fringe like wings, with a dark middle line.

Hindwing: hyaline whitish, tinged with grey at apex, with a grey cell-mark; a submarginal line marked mainly by three grey spots, one at costa and on inner margin, and a third beyond cell; sometimes a fourth is visible on the submedian fold, and another on margin beyond cell.

Underside of forewing brownish grey; the outer line blackish, and the stigmata more or less visible; hindwing white, with the spots blackish.

Head, thorax, and abdomen brownish grey, speckled with darker.

Expanse of wings: 19 mm.

The description was made from the ♀, the ♂ not being in so good condition.

1 ♂, 1 ♀, above Calheta, S. Jorge, May 7, 8: *type*.

1 ♀, Caldeira, Graciosa, April 26.

32. *Scoparia frequentella* Stn.

A small series from—

Almagreira, Sta. Maria, February 27.

San Pedro, Sta. Maria, March 2, 3.

Sta. Cruz, Flores, April 19.

Caldeira, Graciosa, April 27.

33. *Scoparia interlinealis* spec. nov. and ab. *pallidimarginalis* nov.

Forewing: narrow; ochreous grey, with darker grey markings; the dark tints have a tendency to form dark lines between the veins, especially towards the hind-margin, while the costa and inner margin are often broadly ochreous to near hind-margin; in consequence the usual transverse markings are rarely clear; when visible the inner line limiting the basal area is acutely angled in middle, and the pale oblique outer and submarginal lines are sometimes visible across the dark linear shades; the stigmata are reduced to flattened black blotches, the reniform sometimes appearing to be broken up into 3 or 4 black dots; fringe pale with a dark middle line.

Hindwing: shining whitish grey, rather darker along margin.

Underside of forewing shining dark grey with the costal margin ochreous; of hindwing whitish.

Palpi whitish above, black below; head and thorax dark grey; abdomen ochreous.

Expanse of wings: 16 mm.

In one of the ♂♂ the whole forewing is dark brownish fuscous, narrowing from base to margin; the costal and inner-marginal streaks are broad and ochreous, and the fringe also is glossy ochreous; the extremities of the two lines appear as slight dark streaks on the pale margins. For this form, which looks at first quite different, I propose the name *pallidimarginalis*.

A series from—

Furnas, S. Miguel, March 14-18.

Sete Cidades, S. Miguel, March 23.

Crater above Reguinho, Terceira, April 6.

Sta. Cruz, Graciosa, April 22.

1 ♀, Caldeira, Graciosa, April 26: *type*.

Above Calheta, S. Jorge, May 5.

34. *Scoparia scoriella* Wollast.

3 ♂♂, 2 ♀♀, Rabaçal, Madeira, June 7.

35. *Scoparia semiamplalis* spec. nov.

Forewing: whitish; the markings blackish and distinct; a blackish cloud at base of costa; the whole middle space between the two lines blackish, almost obliterating the stigmata; the submarginal shade restricted to two triangular blotches, one on costa, the other on inner margin; a dentate black marginal line

with a few black scales at middle ; fringe whitish, with the base thickly mottled with blackish.

Hindwing : greyish white, semi-hyaline, darker grey towards apex, with a grey cell-mark ; fringe white with a grey line.

Underside of forewing dark grey with a white costal mark beyond outer line ; of hindwing pale grey ; fringe whitish with a dark line.

Head and thorax dark grey ; abdomen paler with anal tuft whitish.

Expanse of wings : 16 mm.

1 ♂, Reguinho, Terceira, April 6.

This might have been referred to *S. stenota* Wollast. as a dark aberration, but the hindwing is very wide and rounded, while that of *stenota* is narrow and pointed at apex.

36. *Scoparia stenota* Wollast.

1 ♂, Reguinho, Terceira, April 6.

1 ♂, above Calheta, S. Jorge, May 2.

NOTE ON THE ELAND OF THE WHITE NILE.

BY THE HON. WALTER ROTHSCHILD, Ph.D.

(Plate XII.)

SOME three years ago I obtained two skulls with horns of an Eland from the Bahr el Ghazal, and I was at once struck by their gigantic size, as compared to South African specimens. They fully confirmed Heuglin's diagnosis of his *Oreas gigas*. Although four or five other skulls and horns were obtained, it is only within the last few months that scalps and head-skins have been sent home. To my astonishment the Eland in question turns out to be very close to, if not identical with, the Derbian Eland, *Taurotragus derbianus*, of Senegambia. Until we can compare recently killed West African *T. derbianus* with White Nile specimens, it is impossible to say definitely if they are identical. Heuglin's Eland will therefore at present stand as *Taurotragus derbianus gigas*, though the individual differences in the three head-skins I have seen are so great that I personally have no doubt that Heuglin's Eland is true *Taurotragus derbianus*. The plate is from a specimen now in the Cairo Turf Club.

ON SOME NEW LEPIDOPTERA DISCOVERED BY A. S. MEEK IN BRITISH NEW GUINEA.

BY THE HON. WALTER ROTHSCHILD AND KARL JORDAN.

WHEN describing in *Nor. Zool.* xi. p. 310 (1904) some remarkable Lepidoptera obtained by A. S. Meek at Owgarrá, situated at a high altitude north of the head of the Aroa River, we mentioned that the outbreak of measles had compelled the collector to return at once to the coast with his men. The few hundred specimens found during two or three days' collecting, among which were the wonderful new *Troides chimaera* and a number of new *Delias*, new *Lycaenidae*, *Milionia*, etc., were just enough to show what a fine collection might have been got together if no such deplorable disaster had overtaken the expedition. After all the hardships undergone and the personal danger attendant upon an expedition into the interior, it would have been very natural if the hard luck experienced had discouraged A. S. Meek entirely from going again into the mountains. But our friend's spirit is not easily damped, and the fine things he had found up there did not leave him any peace. We were agreeably surprised to hear from him that he had made preparations to revisit those high regions in order to make a thorough collection of Lepidoptera, and especially to discover the male of *Troides chimaera*.

Well, the collection is safely in our hands, and a remarkable one it is indeed. We do not easily get into ecstasies over some new species arriving at Tring, but this collection gave us reason for being astonished. Not only is the percentage of new species very high, but what is more noteworthy, there is a remarkably large number of new genera of which no representatives have been found at lower altitudes. The total number of species is less high than in the first collection made by A. S. Meek on the Upper Aroa River in 1903; but that is only natural, considering the altitude and attendant physical features of the region where the present collection was made. Meek's letters referring to this expedition are very interesting reading. As they give one a good idea of the district collected in, and of the doubtful pleasures a collector must expect to meet if he ventures into the interior of New Guinea, we give here some extracts, which we hope the reader will find as interesting and instructive as we did ourselves. We congratulate Mr. Meek heartily on having achieved such great success in a district where climate and natives are equally bad.

In a letter dated Cooktown, July 4th, 1904, Mr. A. S. Meek told us that he was still undecided about a new expedition to the mountains. "But I am almost sure," he added, "to take that trip. If I do go I intend stopping inland a long time (not for good, I hope), and shall try to get all my boys signed on for twelve months. I shall probably take an extra assistant and a big crowd of collectors, so as to do the thing thoroughly."

A fortnight later he informed us that he was going to leave Cooktown for New Guinea, in order to engage "boys" as collectors and carriers, before proceeding west (from Port Moresby). "The leeches are terribly bad at those

altitudes. I shall make canvas 'sea-boots' for the boys this time before we start. I am going to try very hard for the male of that hairy *Troides*, and am taking up a quantity of trade goods and gear to induce the natives to help. I am rather off colour at present through loss of blood. The doctor was in this morning, and managed to stop the bleeding somewhat. I must have lost a quart of blood during the night. If I don't get better I shall not leave for New Guinea by this boat."

Fortunately Mr. Meek recovered sufficiently to leave Queensland. His next letter came from Sariba Island, Samarai, British New Guinea, dated August 10th. "I have not started for the mountains as yet. I was away last week looking for boys, but without success. I have been very unwell lately; in fact, I don't think I shall be fit for much more knocking about without a good long change of climate, which I hope will set me up again. During the first day I was away by myself looking for boys I was sick all the time. I wish it were possible for me to send some one in my place on this next mountain trip! I should like to get well up in altitude before the birds commence moulting. As I had a good deal of new gear made while I was in Queensland last month, we shall be better equipped and start under better conditions than previously, knowing the language a bit and the natives, besides having my previous experience, which is all worth a great deal. I am also taking a new assistant, though I have as yet my doubts whether he will be of much good to me."

On October 17th Mr. Meek writes from the Aroa River: "I am now fairly on my way to the high mountains, coming this time *via* Yule Island. It has taken us one long day by canoe up the inlet, two days by drays (per sandalwood getter), and four days by boat. Of course it is the delay everywhere in getting carriers which eats up the time. Since I started recruiting collectors for this trip just two months and a half have elapsed, and I do not expect to be in camp at the high altitudes before three weeks at the earliest. Please send me some more boxes for insects. I shall most likely come up again, as there is no great point in losing so much time for one collection only—though I want very badly to come home next year. It is strange how one's blood gets so bad out here. A week ago I foolishly struck a native with my hand (instead of taking a lump of wood), and accidentally struck his teeth. Now I have a beautiful hand that may take months to heal. Some years ago you sent me a sketch of a beautiful *Delias* which has a large orange patch on the underside of the hindwing, with a black dot in it, and of which I got only one specimen last time.* The reason for that, I find, was that we were too high. I have noticed several specimens lower down than this place. We are yet two days below my camp of the first trip. It will take us as long as that on account of the difficulty of procuring carriers. Of course the higher we get the quicker we shall travel, as the population is more numerous and the natives are more willing to carry, owing to their want of trade goods. I shall try to stay four months this time, health permitting. But it is very wet up there, and cold and miserable. It can't be too healthy to have the blankets soaking wet every night, and almost to have to wring them out every morning! The birds are all starting to moult, I find, so I doubt if I shall do much in that way this time. Besides, I haven't any of my regular South Sea shooting boys with me, whom I have had for so many years. I find my previous knowledge of the language of the very greatest help. I am taking two natives

* *Delias albertisi negi*.

from here as interpreters to Owgarra on the mountains. That speaks for itself. They would not have confidence to come if they did not understand one."

On October 21st Mr. Meek reached a place suitable for his camp. To get there from the coast had taken him just a month! The difficulties of travel in those parts are enormous. "My men and carriers got here two days later. I shall try to stop until New Year in this camp. The cold is intense at night. One of my boys had fainting-fits to-day. I put it down to change of climate. He belongs to Kapahapa, a coast village, built over the sea, close to Port Moresby, and is a big, strong fellow. This place is only six or seven hours from my old camp of the second trip, but is very much higher, as one has two big mountains to climb, and comes down very little. I came over accompanied by six boys, and was in clouds from the time of leaving camp; it was raining all the way. When I got here I mentally resolved to go back the next day; but at daybreak the next morning everything looked so bright and promising that I sent carriers back to bring our gear.

"The man I mentioned yesterday as being ill had to be strapped up all night for fear of his doing some damage. He went off his head again in the early part of the night, and cleared into the bush with a couple of long net-handles, under the impression they were spears. I had to send the boys out with a lamp to find him. They found him collapsed, but he was violent enough when brought into camp. I have another man who went off his head, but was quite harmless (so far). He has had only one attack. He told me the next morning, 'S'pose my place, boy make'm hand leg fast, longa maina (rope), bye'mbye t'morrow all right finish.' I have sent my mail-boys down to the coast, and hope they will bring the insect-boxes, which have arrived there.

"A white man, a prospector, accompanied me to the Aroa River, where I had to leave him. He seemed too scared of the natives to bring him along to places where there is a chance of the natives being bad. The people up here killed a man about four days ago belonging to a village situated on the next spur to this one. Next day they could distinctly be heard from here wailing. The people here have repeatedly asked me to go and shoot the neighbouring crowd! One can count over thirty villages from here. It is too cold at this altitude. The boys can't stand it; they are shivering all night, and complain most bitterly of the cold. It's no wonder, for I myself find it difficult to keep the cold out at night with two woollen singlets and cloth jacket, besides being under a heavy rug. When it is raining or cloudy (fog) it is not too bad; but these clear nights the cold is very piercing. From my camp here, on a clear morning, we can see over the head of this river and on to the watershed of the Tanapa, which river can be traced to its head, a distance from here I should estimate to be about twenty miles in a direct line. Please don't imagine I am telling you this in the expectation or hope of your wanting me to go there, for I should be very reluctant to go. To get to the head of the Tanapa from here would take, I should say, about three weeks(!), not allowing for hostile natives. We are camped on a spur high up on the side of a valley, and on a sunshiny morning it makes a very pretty sight looking down the valley; it's all grass, extending low down, being divided into paddocks with villages, resembling farms and meadows of some places in England. There is another big tribe named Endeber higher up on this river; I can just make out the first of their villages from here. I may send collectors there if any people come down from there

visiting my camp, though I am doubtful if there would be much difference in the insects. The villages are much closer to the river than we are, which accounts for us being able to see over the head of the watershed.

"It will be a wonder to me if I get through these next two months without some sort of friction with the natives. These people here are quite different from the Aroa River lot, being lazy, and inclined to be saucy when there is a big crowd of them. When in Cooktown last I bought two kangaroo dogs (stag hounds). The dog got bitten by a snake on the road up, and died. The bitch gave birth to six pups four days ago, since when she has developed man-eating propensities. I have had to pay several natives for her tackling them, and have now no difficulty whatever in keeping the camp clear of natives. They are only used to such little rats of dogs that the size alone of this one scares them.

"I find the man I brought up from the Aroa River is of very little good, in fact useless, as interpreter, and I never use him for that purpose, as I am able to make the natives here understand myself. They know much more of the Aroa River language than I thought. This chap's mate left me on the road: he got scared at seeing so many natives. I am rather sorry that the other man did not bolt too.

"This place certainly 'takes the bun' for rain. So far it has been raining every afternoon. Last time I was at Cooktown I sent to Brisbane for seven air-tight boxes and an acetylene-gas lamp, and am now very thankful I did. I have a staging rigged over the edge of the steep slope, almost a precipice, and put the lamp on that and work the nets. I am rather disappointed as regards day-flying moths: I expected to find many more. I have one medium-sized white Nymphalid with simple tail like *Charaxes*. The insect has black underside with white stripes.* Then I have the almost pure white *Morphotenaris nivescens*, and a grey and white *Tenaris* with narrow forewing, which I have not met with before. There are perhaps altogether eight or nine fair-sized butterflies which are new to me, but any amount of new moths. These are rather the rule than the exception this time, especially among the *Geometridae*. I have so far taken all the *Pieridae* found before on the Aroa River and at Owgarrá, with the exception of one, and have a fair number of moths. The latter I find resemble very much European things, more particularly the moths which sit on bark or wood."

Soon after arrival at his destination Mr. A. S. Meek **saw** two males of *Troides*. "While waiting for the carriers I went down to the bed of the river to look at the country for collecting purposes and to select a suitable place for the camp. I had just started to come up, when a native sang out, and not more than fifteen yards away I saw a male *Troides* going down fair wind at a great rate. I most distinctly saw it was green, and at the time felt very disappointed, as I took it for the common form. The second male, which I saw some days later, was a **big** black and golden specimen that went past the camp. Several people saw it, and one man had a shot at it with small shot. It seemed to be hit, as it spun round, then closed its wings and disappeared over a precipice. I had all the boys out then, what time it was not raining, looking for it, but without success.

"The natives have brought me in four damaged females of the common kind, but more velvety black."

"Since writing last," Mr. Meek proceeds in his letter of November 14th, "the natives have brought in four *males* of the common green *Troides*, thus

* *Myges websteri hibernicus*.

clearing up any doubts about the females previously mentioned : and also one female of the banded *Troides*.* I obtained an egg from her, but am doubtful of finding the creeper here to rear the larva on. I have also seen one more male, black and gold, presumably of the species with the banded body. Now is the first quarter of the moon. I shall stop here until the first full moon after next—that is, about five weeks.”

On November 16th Meek obtained the male of *Troides chimaera*. “I have the male at last! It is a most beautiful insect, all black and gold. There are three long stripes on the forewing; the hindwing is semitransparent and gold, inclining to be tailed.

“I am not bothering much about birds, the leeches being too bad. I told you before, I have no good shooting-boys this trip, consequently my assistants have an easy time. Birds are not worth collecting unless one can utilise the shooting-boys as boat’s crew.

“I got a small *Charaxes*-like butterfly new to me. It is greenish white with deep black border.†

“We have had a spell of comparatively dry weather,” A. S. Meek continues on November 22nd, “and have made several additions to the collection. There is one large ‘Owl-butterfly,’ chocolate, with large eyes on the hindwing; it has a similar eye near the tip of the forewing and a large cream or yellow band.‡ I have also two more females of the banded *Troides chimaera*, and a female of a possibly new species (though doubtful), with the forewings black and the hindwings dark yellow and black.§ There is yet another Pierid, for which I think you will have to make a new genus, and several handsome day-flying moths. The collection is going to become a good one. The *Troides* male alone is worth coming for, if one could only afford to collect for pleasure. It is the most handsome and the largest species I have seen. The specimen is absolutely perfect. I have now two fertile eggs of the species.”

Mr. Meek did not succeed in rearing the larvae.

As the consignment of insect-boxes despatched from Tring had not reached him before starting for the mountains, Meek was rather short of boxes for the set insects. On December 6th he writes: “I have been busy all day shifting specimens, repacking and throwing away any damaged specimens of insects, trying to economise space so as to be able to make a longer stay than originally intended. So you can judge what my joy was to see my mail-boys coming back, after fourteen days’ absence, with two packs of store-boxes and a big mail. I will now stay longer here, in spite of the troublesome natives. By Jove! after getting my camp safely away, I should like to come back and punish a few of these niggers here most severely. There are some here with whom I should not put up any longer, if it was not for getting the camp away. They are too trying. I do not know which way to go back, as I am afraid of the Aroa River in the wet season, on account of getting the collections over. Perhaps I shall go back the way I came up the first time.

“Four of my boys have run away.

“I have got another female of the banded *Troides*, perfect, with the exception of the legs being lost. The natives shot all the females with pronged arrows. I felt more pleased when the male of this species was brought in than if I had been

* *Troides chimaera*.

† *Helegra*.

‡ A new *Morphopsis*.

§ Aberrant ♀ of *euphorion*.

left a fortune. I gave the boy two shillings, two tins of English bacon, and five sticks of tobacco. I have got what I came for, so I am satisfied. Of the *Morphotenaris* I have a fair series now, but we are too high for the tailed *Troides*.*

It was not a particularly fine Christmas that our friend spent up there in his mountain camp, near the head-waters of the Angabunga River, a southern affluent of the St. Joseph River. "Rain all day yesterday and to-day," he writes on December 25th. "My mail-boys have been away eighteen days, and are not back yet. Up to the present I have set about 5000 insects, and have everything now that I came for, and am in hopes of getting more of that fine *Troides*. I have lately been getting local natives to work for them, but cannot get any good specimens besides the first one.

"Three days ago I had to go across to another village to make friends (or otherwise) with the natives of Sotamah, on account of the people here at camp telling me they were afraid of going there to collect, as the Sotamah people were threatening them with spears from above on the hillside. I have been expecting a pig and native food yesterday or to-day, as a sign of good-will resulting from my journey, but the rain has apparently delayed them.

"You will probably recollect my mentioning some time ago that I thought you had made a mistake in stating I only got one female of *Papilio weiskei* during my stay at the Aroa River in 1903. Well, I have kept this time all the specimens, both good and bad, and find that I have several females, but *not one* like the single green female specimen figured by you.

"If I could only find the proper food-plant of the banded *Troides*, I could breed a lot. I have fully fifteen eggs of the species; some have already hatched, but the larvae have died. The natives shoot the females, as I said before, with bows and arrows.

"I have read Mr. Pratt's article describing his expedition to the Aroa River (Dinawa and neighbourhood). It is rather amusing reading for one who knows the country. 'So thick was the forest that scarcely any light penetrated' . . . 'and as it was raining most of the way, not a sound was heard or a sign of life, etc.' I suppose this is the approved style of writing about a tropical country. But you will perhaps be interested to hear that down near the coast 'game' abounds. It is usual for a person who has any go in him to be ahead of the carriers with rifle or gun to shoot game. The last time I came up (last year, on the 'measle' trip), we got three Goura pigeons, one cassowary, one 'turkey,' two wallabies, and, with dynamite, about a hundredweight of fish in one day's travelling. I only wish we had some of the game up here.

"The hindwing of the banded *Troides*, when alive or fresh, is almost a transparent gold. I saw a specimen some hundred feet high up some days ago, and the hindwings were so conspicuous that the specimen looked as if it had brilliant yellow tails. I notice that the transparency disappears more or less when the specimen is dead and dried. I notice too that in the old specimens the greenish golden colour along the costal margin of the forewing has turned to bluish green on account of sun or weather.

"I am going to send this letter down by native carrier to-morrow (December 29th). I have heard to-day from the natives that some of the boys I sent down on the 8th have been killed by the Powra people, and that the remainder are afraid of coming back here. So if this letter reaches you, it is lucky. I am sending it by a different route, along the south side of the Aroa instead of the north, which was the

* *T. meridionalis*.

way we came after leaving Booboonie on the Aroa. I shall probably go that way myself on the return, as I don't want to jeopardise this collection by hostile natives. I shall not stop more than six weeks here. I have enough of it. This incessant rain is very disheartening. It's not too bad when one has plenty of work, but that is impossible when it is raining so much. There is no doubt a collector earns all he makes. This killing business will make the remainder of my boys very chary of going far from camp.

"January 7th.—I have been unable to get a native to bring this letter down. As I got further news that all my boys whom I had sent down to the coast, as well as the runaways, had been killed, I had the camp packed up ready to start. To my surprise, shortly before sundown the boys reported to be killed turned up, bringing my mail and a little flour and sugar.

"I have got another new 'Owl-Butterfly'* and several male specimens of the rare *Troides*. I am too high for *goliath* and *meridionalis*, except in the bottom of the valley below us, where one can get most of the coast things. But I do not work there on the meagre chance of getting these rarities.

"I shall leave here in February *viâ* the Aroa. We have to cross the Aroa in two places ; it means a big swim, the river being very rapid in flood."

The collection has arrived at Tring in very good order. Besides the male of *Troides chimæra*, the two fine new *Morphopsis*, the splendid Lycaenids and day-flying moths, the most noteworthy Lepidoptera obtained are some new genera of *Satyrinae* allied to *Hypocysta* and a new genus of *Saturniidae* allied to the Indo-Japanese genus *Rhodin*. One of these *Satyrinae* is a mimic of *Mynes websteri* and some Pierids. The peculiar *Phirdana weiskei* Rothsch. (1901) is apparently not rare at that high altitude : also *Aerara meyeri* Kirsch (1877) was met with in some numbers. The *Delias* discovered by Weiske and Meek on the Aroa are all represented in the collection, mostly in fine series, there being also one conspicuous new *Delias*, and another new Pierid for which we have to propose a new genus. There are only a few species of *Euploea* and *Tenaris*,† while the Lycaenids are well represented. We describe only some of the novelties in the present paper, as lack of time prevents us from studying all the species collected.

The specimens are all from the Angabunga River, a southern affluent of the St. Joseph River, 6000 ft. and upwards, November 1904 to February 1905.

NYMPHALIDAE.

1. *Morphopsis ula* spec. nov.

Sexes similar.

♂. Body mummy-brown above, greyish tawny-olive beneath ; palpus with two pale lateral lines, one beneath and the other above.

Wings, *upperside*, pale chestnut.—Forewing : distal margin scalloped, hinder margin strongly rounded-dilated ; a broad band from two-thirds of costal margin to distal margin, reaching the latter between M¹ and (SM¹), creamy, washed with ochraceous behind, proximally incised or sinuate on or just behind the veins, the disc brown between apex of cell and creamy band ; a band of four large black spots from SC¹ to R², not separated, the first spot indistinct, the second and third elongate, the fourth round, the last three centred with bluish white ; three brown

* A second new *Morphopsis*.

† On the lower Aroa River Mr. Meek found a series of *Tenaris hutleri* Oberth. (1879).

submarginal halfmoons R^2-M^1 , followed distally by a brown admarginal line which is broken at the veins; marginal area olive-black from R^2 costad, ochraceous tawny backward; fringe olive.—Hindwing scalloped; costal area, inclusive of almost the entire discoidal cell, and abdominal area from (SM^1) backwards olive-bistre, distal edge washed with olive; a very large black ocellus M^1-M^2 , centred with white and blue and encircled by an ochraceous tawny ring, the ocellus extending beyond veins M^1 and M^2 , occasionally a small ocellus between R^3 and M^1 and another between R^2 and R^3 ; a reversedly crenate pale tawny submarginal line bordered with blackish brown on both sides.

Underside olivaceous wood-brown, somewhat clayish.—Forewing washed with olive-black from M^2 forward; an olive-black band across middle of cell, bordered on both sides by olivaceous wood-brown, the distal one of these pale border-lines angulate and contiguous with an olive-black line which gradually shades off distally; a curved row of olivaceous wood-brown halfmoons from M^2 costad, strongly arched, open distally; a short creamy-white costal band costally of these halfmoons, the band reappearing between R^2 and R^3 , the olive-black space between the white markings (and further back) being sharply limited by a pale line; outside the white spot $SC^{15}-R^1$ a chocolate patch; an irregular row of ocelli from SC^2 to M^2 , ocelli R^1-R^2 and M^1-M^2 black, ringed with wood-brown and olive and centred with white; the other ocelli more or less wood-brown, ringed with olive and marked with a thin white halfring, ocellus R^1-R^2 more proximal than the others, the band of ocelli accompanied on each side by a more or less continuous olive line bordered with wood-brown; outside the ocelli a row of chocolate spots bordered by an olive-black reversedly crenate line, upon which follows distally a similar but thinner olive-black line, the former line ending in a black cloud between M^1 and SM^2 .—Hindwing: a black, slightly chocolate line before middle of cell extending from anterior margin of cell to SM^2 , curving distad from middle of cell to M , straight in front and behind; an olive-black irregularly crenate line from costal margin to SM^2 , outside cell, separated by a wood-brown crenate line from a row of more or less strongly arched chocolate spots, spots SC^2-R^2 thin, the others broader and continuous; a large black double ocellus $C-R^1$ centred and sprinkled with white, surrounded by wood-brown and olive-black rings, followed behind R^1 , but within the outer rings, by a small ocellus; a large black ocellus M^1-M^2 corresponding to that on upperside; two blind ocelli R^2-M^1 , kidney-shaped, farther distal than the black ones, marked inside with a bluish white halfring; these blind ocelli and the posterior black one surrounded together by a wood-brown line; the space between anterior and posterior black ocelli olive-black, slightly streaked with chocolate at veins, the space continuous anteriorly with a chocolate submarginal band which runs parallel with outer margin from C to SM^2 , joining before SM^2 the chocolate discal band, the submarginal band regularly convex distally between the veins, separated by a wood-brown line from an olive-black reversedly crenate line.

♀ similar to ♂. *Upperside*: disc of forewing proximally of pale band much more extended black; black submarginal line of hindwing broad, band-like.

Underside: paler than in ♂; forewing with creamy white band in the same position as above, but much narrower and paler, including the last and part of the last but one ocellus.

Length of forewing: ♂, 50 to 56 mm.; ♀, 50 to 60 mm.

Eight ♂♂, two ♀♀.

2. *Morphopsis meeki* spec. nov.

♂. Body olive-black, slightly chocolate on pronotum and sides of sternæ; antenna tawny.

Wings, *upperside*, olive-black.—Forewing: hinder margin less rounded-dilated than in the other species, long, distal margin almost entire; a very broad silvery white glossy band from costal margin to hinder angle, not reaching the edges of the wing, widest at R^1 , being distally angulate at this vein.—Hindwing: a black ocellus M^1 — M^2 half-way between cell and distal margin, marked inside with a white halfring, and encircled by a pale shadowy ring; two round pale blue spots R^2 — M^1 at two-thirds from cell to outer margin, centred with a white line; a tawny orange submarginal band proximally dentate upon the veins, ill defined distally; distal edge of wing somewhat scalloped.

Underside olivaceous mummy-brown.—Forewing: a pale indistinct bar across middle of cell; a black ocellus R^1 — R^2 encircled by an indistinct pale ring; proximally of ocellus a pale line, angulate at R^1 , ending in a white costal bar; this line joining before R^3 another indistinct line which runs distally of ocellus from costal margin to M^2 ; a reversedly crenate pale submarginal line followed by a straight admarginal one; the pale lines olivaceous bistre, like hindmarginal area from M^2 backwards.—Hindwing: abdominal area rufous chestnut; a black double ocellus SC^2 — R^2 marked inside with white, encircled by rings of bistre, olive-black, rufous chestnut, olive-black, and bistre; two separate black ocelli M^1 — SM^2 , marked with white, each encircled by a bistre ring and the two together by rings of olive-black, rufous chestnut, olive-black, and bistre; the external bistre rings of the anterior and posterior ocelli connected with one another across R^3 ; to the rings are also joined two lines situated proximally of the ocelli, the anterior line running from costal margin obliquely distad, ending in the bistre ring between R^2 and R^3 , the second line, convex proximally, emanating from the posterior bistre ring between R^3 and M^1 , joining the ring again behind SM^2 , the space encircled by this second line chestnut; two small bistre spots R^2 — M^1 distally of the ocelli, bearing bluish white scaling, the spots representing two more ocelli, being either separate or being connected one with the anterior, the other with the posterior bistre ring; a reversedly crenate submarginal line followed by a straight admarginal one, both bistre-colour.

♀. Wings paler on *upperside* than in ♂.—Forewing with rather narrow band from beyond middle of costal margin to apex of SM^2 , slightly widening behind, yellowish cream-colour in front, gradually becoming orange-buff behind, distal edge of band crenate; a vestige of two black ocelli R^1 — R^2 just outside the band, bearing some bluish white scales; three bluish white submarginal dots SC^3 — R^1 .—Hindwing essentially as in ♂, but fringe cream-colour.

Underside slightly paler than in ♂.—Forewing: band as on upperside, but creamy buff, slightly yellowish behind; an indistinct small black ocellus R^1 — R^2 followed by a vestige of a second ocellus, both situated between the band and a creamy buff line which joins the band before R^1 ; this line angulate at SC^2 , broken up into spots anteriorly; two faint lines along distal margin slightly paler than the ground-colour.—Hindwing as in ♂, but the bistre lines paler, the proximal portion of the outermost bistre rings of the ocelli creamy buff: fringe creamy buff; this colour slightly extending upon wing at apex.

Length of forewing: ♂, 40 to 42 mm.; ♀, 45 mm.

Two ♂♂, one ♀.

Erycinidia gen. nov.

♂. Neuration similar to that of *Hypocysta*; M^1 a very little nearer R^3 than M^2 . Hindwing triangular, being prolonged in the direction of M^2 , ending in an obliquely rounded lobe. Eye naked.

Only ♂♂ of one species known.

Recalling *Lamprolenis* G. & S. (1880) by the shape of the hindwing.

3. Erycinidia gracilis spec. nov.

♂. Body olive, grey beneath; legs somewhat clayish; naked parts of antenna ochreous.

Wings, *upper side*, olivaceous, burnt-umber-brown, hindwing more olive than forewing.—Forewing with a broad shadowy band beyond middle of a deeper brown tint, followed by the vestige of a pale band.—Hindwing with an inconspicuous double admarginal brown line; a small black ocellus behind M^1 , centred with a white dot and encircled by a pale brown ring; tail-lobe with some scattered white scales.

Underside drab.—Forewing more olive than hindwing, a band before apex of cell, extending from costal edge to M , bordered with olive, and a band on disc grey, the discal band almost straight proximally, gradually shading off distally, its inner edge crossing R^3 one-third the way from cell to distal margin; three small ocelli SC^2-R^3 , consisting of a white pupil, an olive ring, a clayish grey one, and again an olive one; outside the ocelli an undulating olive submarginal line followed by a straight, indistinct, admarginal one.—Hindwing irrorated with whitish scales from base to discal line; an olive line from costal margin obliquely to near SM^2 , entering cell just proximally of R^1 and leaving it distally of point of origin of M^2 , the whitish scales slightly condensed near this line; a second line on disc, parallel with the first, contiguous with apex of cell, curved basad at M^2 , bordered with grey on distal side; a straight row of six small ocelli, in which a white central dot is surrounded by black except in the upper two; two olive lines between ocelli and edge of wing, parallel to wing-edge, somewhat crenate.

Length of forewing: 18 to 20 mm.

A short series of ♂♂.

Pieridopsis gen. nov.

♂♀. Eye naked. Wings short; neuration essentially as in *Hypocysta*, but discoidal cells of both wings much shorter, that of hindwing being shorter than R^3 ; D^2 of forewing angulate, R^2 originating from below this angle; hindwing triangular, being somewhat prolonged in the direction of M^2 , this vein ending in a short broad lobe, costal margin long.

Type: *P. virgo*.

Allied to *Erycinidia*, but easily distinguished by the short discoidal cell of the hindwing.

Pieridopsis virgo spec. nov.

♂♀. Body olive, hairs on side of meso-metanotum partly white, abdomen beneath white, palpus clothed with a mixture of white and olive scales.

Wings, *above*, white.—Forewing: apical-distal area and costal margin black.

the black colour entering apex of cell and occupying in ♀ also anterior third of cell (along SC¹); a white costal spot at two-thirds; inner edge of black distal area less sharply defined in ♀ than in ♂.——Hindwing: fringe at distal and abdominal margins black; a black admarginal line from R³ backwards, thicker on veins, forming two dots in tail-lobe, a round submarginal dot M¹—M also black.

Underside of the sexes different (in our single pair); olivaceous black.——Forewing of *male* white from hinder margin forward, this area extending to middle line of cell, sending out a broad belt across cell to costal margin about 1½ mm. from cross-veins, and a narrow band from M¹ obliquely to costal margin, this band being the distal border of a broad black band which extends from costal margin a little beyond M¹, being widest in front; four small, ill-defined, olive-black ocelli SC¹—R³ pupilled with white, the row of ocelli bordered proximally as well as distally by a grey line; parallel with distal edge of wing two rather weak greyish lines contiguous with olive-black ones, the external greyish line very thin. In *female* the wing washed over with olive-black, the white markings being partly vestigial only, and the white discal area being reduced to a broad stripe along hinder margin.——Hindwing of *male*: a broad band from shoulder to two-thirds of M¹, sinuate behind base of M¹, a second band from middle of costal margin to R³, where it joins the first band, the two forming an Y; this Y pale yellow, except from costal margin to SC¹; a row of five vestigial ocelli from SC² backwards, the white centres being alone distinct; upper two ocelli with feeble white line on proximal side, a distinct white band on distal side of upper three, followed distally by two grey lines, which run from apical to anal angles; tail-lobe black, with creamy scales at base and apex; abdominal fold slightly irrorated with dispersed creamy scales, there being also an irregular creamy streak between M² and SM². In *female* the wing washed over with olive-black, the markings being obliterated for the greater part; two white costal spots distinct; a pale yellow patch on disc beyond cell corresponding to the posterior portion of the Y found in ♂; a creamy streak on abdominal fold; ocelli and lines in distal area more or less vestigial, ocellus M¹—M² black, distinct.

Length of forewing: ♂ ♀, 25 mm.

One pair.

Platyphthima gen. nov.

♂ ♀. Similar to *Hypocysta* Westw. (1851) and *Argyrozymptha* Math. (1886). Eye hairy. Wings short and broad, especially the hindwing; neuration essentially as in *Hypocysta*.

Type: *P. ornata*.

5. *Platyphthima ornata* spec. nov.

♂ ♀. Body dirty white, palpus and breast clayish and olive-black, antenna ochraceous beneath, tibiae and tarsi more or less clayish ochraceous.

Wings, *upperside*, olivaceous black.——Forewing: a smoky white area from hinder margin forward to point of origin of M¹, the area somewhat silvery, extending to base, occupying about half the cell, and reaching distally to three-quarters of hinder margin.——Hindwing: silvery smoky white, except a distal marginal border which measures about 5 mm. in front, narrowing behind, including posteriorly a faint line of deeper olive-black.

Underside Olivaceous mummy-brown.—Forewing deeper brown towards base, with faint traces of white submarginal dots, the vestiges of eye-spots; some indistinct tawny scaling at apex.—Hindwing slightly irrorated with dispersed white scales; just beyond apex of cell a creamy band widening behind, gradually disappearing in front, washed over with tawny and brown in front and behind; along this light band, on the distal side, a chocolate band, 2 to 3 mm. broad at abdominal margin, gradually narrowing to a thin line which does not quite reach costal margin; a submarginal row of eye-spots, each with white central dot; first spot represented by a white dot surrounded by olivaceous scaling; second and third with traces of rings round the white dot; fourth and fifth black, with an ochraceous ring followed outwardly by an olive one, this surrounded by a less distinct clayish ring bordered with olive; sixth spot tawny, not ringed; this row of spots accompanied on distal and on proximal side by a narrow metallic vinaceous buff band which is more or less broken at the veins; distal border of wing divided by a thin brown line into a paler proximal and a darker marginal band.

Length of forewing: ♂ ♀, 18 to 20 mm.

A small series of ♂♂, one ♀.

6. *Platyphthima simplex* spec. nov.

♂. Body and upperside of wings as in *P. ornata*; white area of the forewing rather more rounded distally, black admarginal line of hindwing, from R³ backwards, more distinct.

Underside.—Forewing slightly purplish; no vestiges of eye-spots, but an undulating faint line instead, bordered by an olive line distally.—Hindwing rather densely irrorated with scales from base of wing to apex of cell, this area sharply defined, followed by a band-like olive space which is edged with blackish olive distally, this blackish line being contiguous with a metallic, somewhat vinaceous, double band in which are situated the ocelli; ocelli 2, 3, 4, and 6 small, olivaceous, with vestiges of rings and distinct white central dot, ocellus 1 vestigial, with the white dot distinct, ocellus 5 large, black, with ochraceous olive rings; metallic band distally bordered by an olive line, upon which follows halfway to edge of wing another olive line.

Length of forewing: 18 to 20 mm.

Two ♂♂.

7. *Platyphthima leucomelas*.

Hypocysta leucomelas Rothschild, *Nor. Zool.* x. p. 309, n. 1 (1903) (Aroa River).

We described this species from a *male* found by Weiske on the upper part of the Aroa River. A. S. Meek has obtained five more ♂♂, but no ♀. The insect belongs to the present genus.

8. *Platyphthima decolor* spec. nov.

Though this species is rather different from the three others of the genus, we do not think it necessary to separate it generically from them.

♂. Body olivaceous mummy-brown; a broad lateral line on palpus and a line behind eye creamy; tibiae and tarsi more or less clayish; femora, breast and underside of abdomen clothed with olive, clay, and grey hairs; palpus and foreleg mottled with same clay hair-scales.

Wings *above*, olivaceous mummy-brown.—Forewing densely hairy in basal half of cell, the hairs directed obliquely backwards; an indistinct band on disc paler than the ground-colour, parallel to distal margin, slightly angulate close to costal margin; fringe spotted with white, posterior spots indistinct.—Hindwing: R^3 and M^1 nearer together than in the other species, D^1 being less than half the length of D^3 , and the wing longer posteriorly; vestiges of two ocelli R^2 — M^2 ; a faint admarginal double line posteriorly; distal margin scalloped, with white fringe-spots.

Underside.—Forewing bistre, apex deeper in tint; a narrow creamy band on disc from costal margin beyond M^2 ,肘ed in front; three small ocelli from R^3 forward, uppermost largest, each consisting of a white central dot encircled by black, ochreous, deep bistre, and violaceous écu-drab, some chocolate-red scaling near uppermost ocellus; an écu-drab reversedly crenate line from SC^1 to M^2 followed distally close to margin by a straight ochraceous and tawny line, which is broken at the veins.—Hindwing olive-black, irrorated, with creamy white and chocolate-red scales; a creamy white band from near apex of costal margin to middle of SM^3 , irregular, sending out in cell on proximal side a short spur forward and on distal side a spur backward, this latter spur extending along cross-veins, being hook-shaped, just touching a second cream-coloured band, which is narrow, extending from base of R^3 to SM^2 ; four rather large black ocelli, encircled with clayish ochraceous and olive, and pupilled with white, first the largest, SC^2 — R^1 , the others between R^2 and M^2 , vestiges of ocelli C — SC^3 and R^1 — R^2 also present; the ocelli proximally and distally surrounded by violaceous écu-drab bars or rings, which are much broken up; between ocelli and creamy bands tawny and chocolate-red scaling, some reddish scaling also distally of ocelli, especially at apex; an ochraceous admarginal line contiguous on proximal side with a violaceous écu-drab line, which is reversedly crenate; the écu-drab markings of fore- and hindwing somewhat metallic, their violet tint changing according to light.

Length of forewing: 20 mm.

One ♂.

PAPILIONIDAE.

9. *Troides chimaera*.

♀. *Troides chimaera* Rothschild, *Nor. Zool.* xi. p. 311. n. 1. t. 3. f. 25 (1904) (Owgarra).

The ♀♀ obtained by A. S. Meek on the present expedition agree with the one figured, *i.e.*: but the white spots on the forewing vary in size (being often smaller than in the specimen figured, or larger), and the spot in the cell of the hindwing is often absent. The yellow belts of the abdomen also vary much in width.

The ♂ resembles in colour *Troides tithonus* Deh. (1840), but is otherwise very different.

Eye small, with a vestige of a white border behind. Thorax woolly above and below, with red lateral patch beneath. Abdomen woolly beneath, bases of segments black except dorsally; these black bands are either continuous from side to side on each segment, being narrow on the sternites, or there are separated dorso-lateral patches on the tergites and round dots at the stigmata; claspers dorsally and eighth tergite mesially fringed with black.

Wings, *upperside*.—Forewing: venation as in ♀, SC^3 at or beyond angle of cell, not before that angle as in *tithonus*, this angle much less obtuse and M^2

more proximal than in *tithonus*; distal margin slightly concave, the wing being wider and more triangular than in *tithonus*; three golden-green areas as in *tithonus*, the subcostal streak narrower than in that species, streak SC^3-SC^4 more or less interrupted, streak SC^3-SC^5 longer than in *tithonus*, and streak SC^5-R^1 absent or vestigial, seldom well marked, in which case it does not extend to cell; middle area on the whole narrower proximally than in *tithonus*, the cell-streak and streak $M^1-(SM^1)$ being narrower, the area occasionally continued costad distally, joining the subcostal area; fringe with small white spots.—Hindwing shorter and broader than in *tithonus*, veins SC^2 and R^1 nearer together, while M^1 and M^2 are farther apart; much more extended golden-yellow, the discoidal cell being all yellow, except the veins, which are green; the yellow patches SC^2-R^2 less produced distad frontally, while cellules R^2-M^1 are filled up each by a large golden patch, which is only 2 or 3 mm. short of the thin black distal border of wing; cellule M^1-M^2 much more extended green than in *tithonus*, bearing often a golden spot at the base; black submarginal spot $C-SC^2$ small, smaller than spot SC^2-R^1 , and this a little smaller than (seldom the same in size as) spot R^1-R^2 ; distally of spots SC^2-R^2 usually a small golden spot; black distal border very thin, somewhat widening costally.

Underside: the green scaling somewhat golden.—Forewing: green cell-patch as in *tithonus*, black patch at apex of cell and beyond much smaller than in that species, the green patches R^1-R^3 reaching close to cell; the green discal patches each produced distally into a long point midway between veins; black spots within these patches more proximal than in *tithonus*, spots R^2-M^1 standing halfway between cell and distal margin; cellule M^2-SM^2 almost entirely green, a broad green streak behind SM^2 .—Hindwing as above, black border thinner, black submarginal spots slightly larger, the uppermost better defined, cellule M^2-SM^2 green, with black patch beyond middle: hairs upon abdominal fold darker in colour than in *tithonus*, much less numerous and little over half the length.

Length of forewing: 73 to 85 mm.

A fair series of both sexes was obtained.

10. *Papilio weiskei*.

♂. *Papilio weiskei* Ribbe, *Insekten-Borsa* p. 308 (1900) (Area R).

♂ ♀. *Papilio weiskei*, Rothschild, *Nor. Zool.* x. p. 481. n. 1. t. 11. f. 4. ♂, ♀ (1903) (Area R).

Among the relatively small series of specimens sent this time by A. S. Meek of this most lovely species there are several ♀♀. These agree in colour closely with the ♂♂. The ♀ figured by us from Meek's first collection, the only ♀ obtained during that expedition, was green instead of purple. We do not think that the difference in colour is geographical or depends on the altitude, but believe that we have here to do with another case of individual dichromatism, so very common among *Papilio*.

PIERIDAE.

11. *Delias dives*.

♂. *Delias dives* Rothschild, *l.c.* p. 313. n. 7. t. 2. f. 11 (1904).

We described this fine species from a single male. Mr. A. S. Meek has now sent a good series of both sexes. The ♀ is similar to the ♂; the black apical area

of the forewing, *above*, is wider, and the hindwing has a broad black distal border, which slightly widens costally. There are often white submarginal dots on both wings, those of the hindwing being slightly pinkish. The white area is feebly yellowish. The sexes are alike on the underside.

12. *Delias microsticha*.

♂. *Delias microsticha* Rothschild, l.c. p. 315, n. 8, t. 2, f. 18, 19 (1903).

♀. The black borders to the *upperside* of the wings are broader in the ♀ than in the ♂, the forewing bearing a row of white, or yellowish white, submarginal dots and the white area being slightly washed with yellow. The underside is variable. Some ♀♀ resemble the ♂, but there is always a yellowish patch at hinder margin of forewing beyond middle and a vestige of a band across the disc of hindwing. In a second form of the ♀ the cell of the forewing and the whole area behind it are yellow, usually washed with orange; in a third form there is, besides, a sharply defined yellowish white discal band on hindwing, the inner edge of the band being straight and the outer edge curved.

13. *Delias callima* spec. nov.

♂. Palpus, a line behind eye, and the breast greenish yellow, *upperside* of thorax smoky white, abdomen white.

Wings, *upperside*, white, with a black distal border; this border extending on forewing to near upper angle of cell, the costal edge being all black; on hindwing the border widest in middle, tapering in front and behind, contiguous with an ashy grey band, which is the proximal portion of the black border covered with white scaling.

Underside.—Forewing: apical half black, the black colour being more extended than above, entering cell; a yellow spot just proximally of fork $SC^{4.5}$, half-moon-shaped, variable in size, often followed by some more yellow dots which are more distal in position.—Hindwing: black, with a greenish yellow spot at base; a subbasal streak behind C , reappearing at apex, and a spot in angle $SC^{12}-R^1$, usually with some smaller spots near it, bluish white, very variable in extent, a patch of whitish blue scales before middle of abdominal fold; between this patch and the white subcostal spot there is a rufescent vermilion band; a second band of the same colour on disc, parallel to distal margin, more or less broken up into halfmoons, spots $C-SC^{12}$ the largest, the band variable in width, sometimes reduced to a line, which is occasionally widely interrupted.

♀. Very different from ♂. Body more extended greenish yellow.

Wings, *upperside*.—Forewing: black, basal area washed with white and yellowish green; a chrome-yellow band on disc extending from SC^1 to M^2 , widest in middle, variable in width, last spot rarely absent.—Hindwing washed with greenish yellow from base to apex of cell.

Underside.—Forewing: somewhat greyish at base; base of M white, discal band chrome-yellow, much wider than above, with an additional spot situated behind M^2 .—Hindwing: as in ♂.

Length of forewing: ♂, 23 to 28 mm.; ♀, 22 to 26 mm.

A series of both sexes.

Leuciacria gen. nov.

♂. First segment of palpus longer than second, this longer than third. Club of antenna short, broad, abrupt, sensory grooves extending from base to apex of segments. Apex of forewing somewhat projecting, the distal margin being concave beneath it and then convex, four subcostals; SC^1 and SC^2 from cell, SC^3 absent, SC^4 and SC^5 on a long stalk, SC^4 branching off close to apex of wing, R^1 from before middle of SC^5 , R^2 well below upper angle of cell, D^2 being rather more than one-third the length of D^3 , the latter obtusely angulate below middle, M^2 at middle of cell, M^1 rather closer to apex of cell than to M^2 . Hindwing straight proximally at costal margin, the basal lobe very distinct, SC^2 branching off at two-thirds from base to R^1 , D^1 being nearly twice the length of D^2 , the latter oblique, a little over one-third of D^3 , this angulate at one-third, D^4 over one-half of distal section of M . Clasper of ♂ with sharp apical hook curved inwards.

Type: *L. acuta* spec. nov.

Nearest to that group of "*Pieris*" to which belongs the African *P. pigea* Boisd. (1836). In shape resembling a little the larger forms of *Elodina*.

14. Leuciacria acuta spec. nov.

♂. Head, pronotum and hairs of palpus olive-black, meso-metanotum and proximal tergites of abdomen greyish black, if viewed from behind, greyish white in frontal view.

Wings, *upperside*, chalky white, extreme base of forewing, a streak along costal edge to near middle, an apical distal border extending down to M^2 , tapering to a point behind, its proximal edge curved, crossing R^1 in or near middle, and a small basal central patch on hindwing black.

Underside glossy.—Forewing white, slightly washed with yellow, distal marginal band vestigial or absent.—Hindwing white, distinctly purplish, slightly washed with yellow, a trace of a purple band from base of M^1 to SM^2 ; costal edge bright yellow at base, this streak gradually vanishing distally, limited by C .

Length of forewing: 20 to 24 mm.

A series of ♂♂.

ERYCINIDAE.**15. Dicallaneura amabilis.**

♂. *D. a.* Rothschild, *Nor. Zool.* xi. p. 318. n. 21. t. 2. f. 21 (1904) (Owgarra: non ♀).

The ♀ which we described and figured together with the ♂ does not belong to this species. Mr. Meek has now sent a series of ♀♀ which agree in the markings of the underside with the ♂ of *amabilis* and are doubtless the true ♀♀ of the same. No ♂♂ have come with these ♀♀.

On the *upperside*, the forewing is brownish clay-colour at base, pale ochreous yellow in middle and black in apical two-fifths, the black colour extending along distal margin to hinder angle, being about 3 mm. wide at M^2 . The hindwing is brownish clay, with an ochraceous patch at costal margin, and the usual brownish black submarginal spots. On the *underside* the forewing is creamy buff in middle, a line running from inner edge of chocolate distal area into the creamy area, the line terminating at M^2 .

16. *Dicallaneura leucomelas* spec. nov.

♀. *Dicallaneura amabilis* Rothschild, l.c. t. 2. f. 22 (1904) (Owgarra; *non* ♂).

The present collection of A. S. Meek proves that we were wrong in associating this insect, which has a white and olive-black upperside, with the preceding one. The two ♂♂ and four ♀♀ contained in the present collection leave no doubt about its being a distinct species. The sexes are practically identical. The wings of the ♀ are rather broader than in the ♂, the tail is wider, the white area of the forewing and the costal patch of the hindwing are a little larger, and the ground-colour of the underside is slightly paler. For further details see descriptions and figure of ♀, l.c.

Type: ♂.

LYCAENIDAE.

17. *Hypochrysops meeki* spec. nov.

♂. Palpus grey, black at apex and above, with chestnut scales on side. Frons and occiput black, the former with two cinnamon-rufous vittae and along eye a grey line, a belt behind eyes cinnamon-rufous; thorax above blackish olive-green, slightly bluish; abdomen black, with violet reflections; underside of thorax and abdomen clayish grey, sides of breast somewhat ferruginous. Foretibia with thorn at apex.

Wings, *above*, black.—Forewing bright metallic blue from base to disc, this area extending anteriorly to middle of cell and being at (SM¹) about 2 mm. short of distal margin.—Hindwing also with a brilliant blue basi-discal area, which is shot with purple in front and behind as well as distally between the veins, the area being expanded between SC¹ and SM², reaching rather close to distal edge; fringe of both wings more or less dirty grey, except at tips of veins.

Underside of hindwing and costal and apical areas of forewing cinnamon-rufous.—Forewing smoky grey at hinder margin and ochraceous from (SM¹) forward to lower angle of cell; two lines along SC¹ and another in middle of cell greenish or bluish silvery, the mesial cell-line curved backwards at apex; a row of five submarginal dots of the same metallic colour standing at the distal side of minute black dots; between this row and the cell the following metallic spots: four minute dots SC³—SC⁴, three rather larger dots SC⁴—R¹, a bar R¹—R³ near cell and another bar near submarginal dot, a bar R³—M¹ proximally of outer bar R¹—R³; basal area blackish from cell backwards.—Hindwing with numerous metallic bars bordering cinnamon-rufous spots of a deeper tint than the ground-colour, the bars greenish silvery as on forewing: four bars C—SC², with a clayish bar between the first and second and again between the third and fourth, two bars SC²—R¹, with a clayish bar between them: eight bars in cell and between R¹ and R³, the first double, a clayish bar proximally of last; two bars R³—M¹, with a clayish one in between; three bars M¹—M², with a clayish one at base and another between second and third; eight bars M²—SM², the most distal but one partly clayish, all continuous with the bars in front of them; six bars SM²—SM³, partly edged with black; the submarginal bars form an interrupted line, while the other bars stand partly on the interspaces of the bars which are situated before and behind them; an oblique metallic line at base before C.

♀. Not known.

Length of forewing: 14 to 16 mm.

A series of ♂♂.

18. *Deudorix grandis* spec. nov.

♂. Frons and palpus yellowish green, occiput and sides of sterna bice-green; thorax above and abdomen olive, greenish in front, sterna and abdomen beneath with orange middle stripe.

Wings, *upperside*.—Forewing black; fringe greenish; a bright metallic blue patch from near base to apex of cell, extending from middle of cell to hinder margin, remaining about 5 mm. short of outer margin at SM².—Hindwing greenish black, fringe paler, abdominal edge bice-green, longest scales of fringe and tip of tail white; some blue scales on cross-veins, occasionally absent.

Underside bice-green, slightly washed with ochraceous, especially in submarginal area of hindwing.—Forewing: a bar on cross-veins and a band on disc olive-green, bordered with grey, the band gradually narrowing behind, straight, feebly undulating; a marginal band deeper bice-green than rest of wing, limited proximally by a rather indistinct grey line and separated from fringe posteriorly by a pale green line; posterior area of wing greyish bice-green.—Hindwing: a bar on cross-veins and a discal band of the same colour as the markings on forewing, the band straight from costal margin to M², then curving to middle of abdominal margin, some black scales beneath the green ones in the band, the posterior portion of the band distinctly blackish; between discal band and distal margin a shadowy green band separated by a greyish line from a submarginal band of an ochraceous green colour; this submarginal band separated from fringe by a greenish creamy line; two black submarginal dots M¹ SM² partly covered by bluish white scales; anal lobe black, some bluish white scales at its apex and a spot of greenish white ones posteriorly at its base.

♀. Body as in ♂, head and palpus purer bice-green, orange stripe broader on underside of abdomen, narrow and greenish yellow on breast.

Wings, *upperside*.—Forewing greenish black; fringe pale green; a white patch extending from hinder margin forward to R², not entering cell, neither reaching base nor hinder angle.—Hindwing white for the greater part; base greenish black; abdominal margin bice-green; a submarginal band greenish black, widest in front, measuring about 4 mm. at SC², separated from edge of wing by a white line from SC² to anal lobe.

Underside much purer bice-green than in ♂, paler proximally than distally.—Forewing: the white area extending farther costad than above, the green discal band bordered white; a white submarginal line.—Hindwing: markings as in ♂, but green discal band thinner, and accompanied on each side by a white band, both white bands stopping at M², the proximal one much narrower than the distal one and not quite reaching costal margin.

Length of forewing: ♂, 25 to 28 mm.; ♀, 21 to 30 mm.

A small series of both sexes.

19. *Stilbon meeki* spec. nov.

♂. Body olive-black, with a broad clayish grey mesial stripe on underside; frons edged with grey.

Wings, *upperside*.—Forewing velvety black, a distal marginal band from R¹ backwards cyaneous when the eye is between specimen and light.—Hindwing black down to lower angle of cell, basal third of abdominal area olivaceous; rest of wing inclusive of tail orpiment-orange; anal lobe with black spot bearing some bluish scales.

Underside olive, slightly purplish.—Forewing with ten grey lines: first subbasal, from costal edge to M, second and third from M to SM², broken on M, approximate at SM², interspaces between these lines olivaceous black; fourth and fifth lines from costal edge, where they are widened, to M², with olivaceous black interspace; sixth line thin, contiguous with fifth at costal margin, extending to (SM¹), here meeting the seventh line, interspace an olivaceous black band which gradually narrows behind; eighth line thin, interspace greyish; ninth parallel to outer margin; tenth thin, situated at edge of wing.—Hindwing with similar grey lines and blackish bands as on forewing; four oblique lines from C' to M and R³, followed distally by two more lines, a grey ring at cross-veins; anal area paler than above, much less sharply defined, produced to base in the direction of M², this projection band-like, pale salmon-buff; two orange spots within anal area, not very distinct, being remnants of a discal band; black spot on anal lobe bearing a metallic blue spot proximally and distally; two black submarginal spots M¹—SM² bearing each a blue bar; submarginal spots R²—M¹ vestigial.

Length of forewing: 20 mm.

One ♂.

SATURNIIDAE.

Eurhodia gen. nov.

♀. Antenna bipectinate to apex, distal branches of middle segments a little over half the length of proximal branches. Fourth foretarsal segment with slender spine at each side on ventral side. Stem R^{1,2} of forewing nearly as long as branch R²; R³ and M¹ separating halfway between base of wing and tip of R³, R³ much longer than R¹, the point of separation of R³ and M¹ lying a good distance proximally of transparent spot, as is the case also on hindwing; discoidal cell completely open on both wings; oblique cross-vein D' of hindwing longer than the cell is broad.

Close to *Rhodia*, but distinguished by the details mentioned.

Type: *E. gyra* spec. nov.

20. *Eurhodia gyra* spec. nov.

♀. Body ferruginous, antenna and tarsi black.

Wings, *upper side*, cinnamon-rufous, ferruginous at base, streaked with pale orange on the veins.—Forewing: an olive-black band across cell, distally of M², curved; another black curved band proximally of M² between cell and hinder margin; a transparent spot at two-thirds, quite circular, proximally bordered by an indistinct vinaceous-red halfmoon, and distally by a blackish halfring; an olive-black band just outside transparent spot from five-sixths of costa to three-fourths of hinder margin, faintly curved costad in front; between this band and distal margin a reversedly crenate greyish white band imperfectly separated by olive-black scales into two lines, the band ending in a white apical spot.—Hindwing: an evenly curved olive-black line before middle from C' to abdominal margin, bordered proximally by a pale orange band; a small transparent spot at two-thirds, bordered proximally by vinaceous-red and olivaceous halfrings and distally by an olive-black halfring bearing some vinaceous-red scales; an olive-black undulating line distally of eye-spot but separate from it,

parallel to outer margin, followed distally by a similar greyish white line ending in a white apical patch; the olive-black bands and lines rather obscure on both wings.

Underside similar to upper, the olive-black markings replaced by vinaceous cinnamon-rufous ones; hindwing with subbasal orange-yellow band from C to hinder margin, forming a halfring, which is open proximally, bordered distally by an obscure vinaceous cinnamon-rufous band; no further bands between these and the eye-spot.

Length of forewing : 30 mm.

One ♀.

GEOMETRIDAE.

21. *Milionia pericallis* spec. nov.

♂ ♀. Body velvety black; head, pronotum, and legs metallic blue, strongly glossy, sides of abdomen also glossy at base, rest of body with blue reflections; abdomen with orange patch of variable size on underside in distal half.

Wings, *upperside*, velvety black, with blue reflections.—Forewing: rather more elongate in ♂ than in ♀; a broad greenish blue metallic band from costal to hinder margin, variable in width, extended basad at costal margin in ♂, its distal edge crossing cell usually at point of origin of M^1 ; a submarginal band of elongate blue spots from costal margin to M^2 narrowing behind.—Hindwing strongly notched in ♂ before anal angle, the notch vestigial in ♀; a broad metallic-blue patch from base beyond apex of cell, triangular, widening distally, a little longer in ♀ than in ♂; vestiges of blue submarginal spots, often absent; proximally of anal angle a rounded spot of deep crimson, very variable in size, often absent.

Underside black, with blue reflections in ♀; scales raised in ♂ in distal half of wing, intermingled with hair-like scales, between veins large opaque patches, rather indistinct, opaque appearance due to presence of grey scales.—Forewing: metallic blue from base to disc, the blue area extended to near distal margin at M^2 , limited behind at (SM^1), reaching at costal margin a little beyond apex of cell, usually more extended in ♀ than in ♂.—Hindwing: metallic blue from base to near apex of cell in ♂, the area deeply excised behind cell, in ♀ the blue colour extending beyond cell, the area being uniformly blue in and before cell, but more black with blue reflections behind cell; a black spot on cross-veins in ♀; red spot as above, rather paler and larger.

Length of forewing : ♂ ♀, 22 to 26 mm.

A series.

22. *Milionia callima* spec. nov.

♂ ♀. Sexes dissimilar. Body and legs black, with a very strong metallic greenish blue gloss.

Wings blue-black above, the ♂ more blue than the ♀; forewing in ♂ with a metallic greenish blue basal area from SC to hinder margin, the area triangular, widest behind, reaching to two-thirds of hinder margin; in ♀ a slightly curved band of the same colour from costal to hinder margin, reaching the latter just before angle, including the discocellulars, a few blue scales at base of wing.—Hindwing: similar in shape in the sexes, with the distal margin

rounded : uniform in colour in ♂, rather less blue proximally than distally ; in ♀ a few metallic greenish blue scales on disc indicating a discal band.

Underside velvety black in ♂, somewhat bluish ; a metallic greenish blue band obliquely across forewing from costal margin to apex of SM², occupying apical half of cell, widest between M¹ and M², its last partition triangular ; a metallic line from band along SC' to near base ; in ♀ the band more distal anteriorly, including the cross-veins, therefore less oblique than in ♂ and its outer edge not incurved before R³.—Hindwing with a metallic greenish blue costal streak at base, in ♂ a large rounded patch of modified scales at apex, the scales being hairlike and directed backwards.

Hindtibia of ♂ broad, spurs very short.

Length of forewing : ♂ ♀, 22 mm.

Three ♂♂, one ♀.

23. *Milionia aglaia* spec. nov.

♂ ♀. Sexes similar. Body and legs metallic greenish blue, very glossy.

Wings blue-black *above*, more blue in ♂ than in ♀.—Forewing with an oblique band from costa to hinder margin, slightly angulate behind M², starting at costa proximally of cross-veins in ♂, but including cross-veins in ♀, and ending at hinder margin about 3 mm. from angle ; the band usually all red, but sometimes yellow except posteriorly ; a broad red streak between base and band along hinder margin, often extended to the band, merging together with it.—Hindwing with red band on disc well outside cell, variable in length and width, either irregularly denticulate or even.

Underside black, with glossy metallic greenish blue basal streaks, one on fore- and two on hindwing : bands as above, yellow, more or less washed with red ; no red or yellow streak along hinder margin of forewing.

Length of forewing : ♂ ♀, 25 to 27 mm.

A series of ♂♂, two ♀♀.

24. *Craspedosis cyanea* spec. nov.

♂. Body and legs black, with blue reflections.

Wings, *upperside*, blue-black.—Forewing with broad metallic blue band extending from fovea to point of origin of M¹.—Hindwing deep blue in side-light, somewhat glossy from base to disc.

Underside bluish black, both wings glossy blue from base to disc.

Length of forewing : 18 to 21 mm.

Two ♂♂.

25. *Craspedosis desmiata* spec. nov.

♂ ♀. Body olivaceous black, with blue reflections on *upperside*.

Wings, *upperside*, mummy-brown, somewhat metallic, with faint purplish reflections in ♂, apical area of forewing slightly more black ; a broad cadmium-orange band across forewing from middle of costal margin to hinder angle, the fringe remaining black, the band of nearly even width, feebly narrowing behind.

Underside olive-black, with purplish reflections, band on forewing as above, rather paler.

Length of forewing : ♂ ♀, 16 to 20 mm.

A small series.

ARCTIIDAE.

Eriomastyx gen. nov.

♂ ♀. First antennal segment very long, as in *Chamaita* Walk. (1862). C of forewing connected with costa by several veinlets, as in *Schistophleps* Hamps. (1891); four subcostals, SC¹ anastomosed with C, SC² on a stalk with SC¹ in ♂, free from cell in ♀, SC³ absent, SC⁴ and SC⁵ on a stalk, R¹ from this stalk in ♀, free from cell in ♂, cross-veins D² and D³ of equal length and forming an obtuse angle directed distad in ♂, R¹ from this angle, in ♀ D² and D³ (or the vein homologous to the two combined) also angulate together, but the angle directed basad, M² from middle of cell in ♀, from before middle in ♂, M², M¹, R³ and R² nearly equidistant from one another, D³ and D¹ in the direction of M, appearing as prolongation of that vein, as in *Papilionidae*. SC² and R¹ of hindwing on a long stalk in ♀, on a very short stalk in ♂, the wing small in ♂, with broad scent-fold between costal edge and cell, the latter being narrower and C and SC² incurved. In ♂ foretibia reduced; foretarsus thin, long, filiform; midfemur densely clothed on outer side with long thin hairs bearing each at end an ovoid vesicle, these clubbed hairs resembling the stalked eggs of *Hemerobius*.

Type: *E. latus* spec. nov.

The genus differs from *Schistophleps* in the long first antennal segment, besides neurulation; from *Caulocera* in the long antennal segment and the presence of costal veinlets; from *Chamaita* in neurulation.

26. Eriomastyx latus spec. nov.

♂. Head and thorax yellowish buff, antenna, legs, and abdomen creamy, incrassate apices of midfemoral hairs pale tawny.

Wings transparent; *upperside*.—Forewing broad, only half as long again as broad, costal margin strongly curved, yellowish buff, the colour most distinct at base and hinder margin; a subbasal line, widening behind cell into a large patch, another line from costal margin across apex of cell to middle of hinder margin, and a deeply crenate line on disc purplish, indistinct; a dot in middle of cell and another on discocellular black.—Hindwing paler than forewing.

Underside without markings.

♀. Paler than ♂, abdomen almost white; purplish lines of forewing just vestigial.

Length of forewing: ♂ ♀, 11½ mm.

One ♂, four ♀ ♀.

27. Asura rhodina spec. nov.

♂. Body flame-scarlet; abdomen and mid- and hindlegs buff; antenna bipectinate.

Wings, *upperside*.—Forewing flame-scarlet, a subbasal band, costal margin, distal veins and fringe yellow, a large olive patch occupying more than central half of wing, bisinuate costally, trisinuate distally and unisinate behind.—Hindwing pale rose-pink, with yellowish or buffish grey tinge; C close to apex of cell, R² and R³ on a very short stalk, M¹ before apex of cell.

Underside rose-pink, forewing washed with scarlet.

♀. Much larger than ♂ and much paler; antenna simple, with bristles; C of

hindwing more proximal than in ♂, R^2 and R^3 on a long stalk, N^1 from angle of cell; anal tuft blackish olive; olive area of forewing extending to costa, the two costal sinuses deep, especially the proximal one, which reaches beyond M^1 .

Length of forewing: ♂, 7 to 8 mm.; ♀, 11 mm.

A series of ♂♂, two ♀♀.

28. *Caprimima metallica* spec. nov.

♀. Body blue-black, head and thorax strongly glossy, abdomen less glossy; forecoxa, foretibia, first foretarsal segment except base, apex of midfemur and midtibia and of first tarsal segment, greater portion of hindfemur and hindtibia, an apical spot on first hindtarsal segment, apex of mid- and hindcoxae, a spot at base of mesothoracical tegula and the antevaginal tuft white.

Wings, *upperside*.—Forewing glossy blue; a purplish orange spot at apex.—Hindwing white, with a broad blue-black border at distal and abdominal margins, half as wide again at apex as at anal angle, but remaining here as wide as at abdominal margin.

Underside blue-black, slightly glossy.—Forewing broadly bluish white at base, this area continued in cell to lower angle; orange spot at apex slightly larger than above.—Hindwing as above, the blue-black border a little narrower, especially before anal angle.

Length of forewing: 10 mm.

Two ♀♀.

29. *Caprimima aenea* spec. nov.

♀. Head and upperside of thorax blackish green, metallic, abdomen blue-black, feebly glossy; legs a little more extended white than in *metallica*; antevaginal tuft white.

Wings, *upperside*.—Forewing like thorax; three white spots, first transverse, a little nearer base than M^2 , reaching neither costal nor hinder margin, second rounded, at upper angle of cell, third subapical, small, subdivided by R^1 , an orange-purple spot between second and third white spots.—Hindwing bluish black, a large white patch from costal margin to SM^2 , oblique, black distal area more than twice as wide at costal margin as at SM^1 , but here surpassing in width the abdominal area.

Underside blue-black, not metallic, white markings somewhat larger than above, especially the subbasal spot of forewing.

Length of forewing: 10 mm.

Four ♀♀.

30. *Neoscaptia albata* spec. nov.

♂. Body black, head and upperside of thorax metallic blue, abdomen slightly blue; palpus and legs luteous, the scaling of the latter partly blue, especially on foreleg; apex of hindfemur, basal half of hindtibia, and the greater part of the first segment of the tarsi, as well as a large patch laterally on mesosternum, white; claspers creamy.

Wings, *upperside*: venation distorted on account of a scent-organ; costal margin of forewing turned up, fringed with long scales lying backwards, cell strongly reduced in width, a large subbasal fovea on fore- and hindwing, convex

above on fore-, below on hindwing.—Forewing: base blue, a broad subbasal band white, contiguous with a broad purplish blue band which is constricted in middle; disc purplish orange; apex and distal and costal edges black, metallic purple, strongly glossy in side-light; a white subapical dot.—Hindwing white, bordered with olive-black at distal and abdominal margins, the border widest at apex, very thin at anal angle.

Underside as above, no blue metallic gloss; the blue bands of forewing partly replaced by olive-black ones; fovea of forewing glossy white-grey, that of hindwing olive-black.

♀. Like ♂; anal tuft smoky grey above, white beneath; white band of forewing broader than in ♂, with a thin blue distal border, black distal and costal borders thin, hardly wider at apex than at hinder angle.

Length of forewing: ♂ ♀, 9 to 10 mm.

Two ♂♂, three ♀♀.

31. *Neoscaptia aequalis* spec. nov.

♂. Similar to *N. albata*; head and upperside of thorax dark metallic green-blue.

Wings, *above*.—Forewing like head and thorax; costal fold as in *N. albata*, also the fovea on fore- and hindwing; a small white spot behind costal fold well before middle, with some white scales in front of it at edge; an ill-defined discal band from costal margin to hinder angle, purple-orange, much shaded with metallic green-blue scales, especially in middle.—Hindwing purple-black, with a large white basi-discal area, subtriangular, smaller than in *N. albata*.

Underside purplish olive-black.—Forewing: a small white streak at base; subapical white dot as above, proximally of this dot a conical longitudinal orange-tawny spot.—Hindwing as above, costal edge white in front of fovea.

♀. Like ♂. Forewing with white subbasal spot above, very variable in size, and a large white basal patch below; tawny-orange spot rounded above, about three times the size of the white one, vestigial below; white area of hindwing rather larger than in ♂.

Length of forewing: ♂ ♀, 9 mm.

32. *Neoscaptia leucodera* spec. nov.

♂. Head and upperside of thorax metallic green-blue, rest of body olive-black, slightly purplish; collar with two white spots; a lateral patch on breast, and basal half of the first segment of the tarsi white; claspers creamy.

Wings, *upperside*.—Forewing: costal fold as in *N. albata*, but smaller, no fovea on fore- or hindwing; metallic green-blue like thorax; a subbasal band from costal fold straight to hinder margin preceded by a dot on costal fold, and a round subapical spot, white; proximally of subapical spot a purplish orange patch, obliquely ovate, from SC^2 to M^2 .—Hindwing olive-black, with a bluish sheen; a large white triangular area from costal margin to SM^2 , the black distal border being $1\frac{1}{2}$ mm. broad at SM^1 .

Underside olive-black, slightly purplish.—Forewing: a white streak from base to apex of cell; orange spot smaller and white subapical spot larger than above.—Hindwing: white area larger than above.

♀. Like ♂; apex of hindfemur and basal half of hindtibia white, in addition to the first tarsal segment, the collar, a lateral patch on mesosternum and the

antevaginal tuft; white spots on wings somewhat variable, subbasal one of forewing rather smaller than in ♂, purple-orange spot also smaller.

Length of forewing: ♂ ♀, 9 mm.

One ♂, two ♀ ♀.

Resembling in colour *N. aequalis*, but easily distinguished by the white collar, and, in ♂, by the different scent-organ.

33. *Neoscaptia poecila* spec. nov.

♀. Head and upperside of thorax metallic purplish blue, rest of body and legs olive-black, with slight purple reflection; collar with two contiguous white spots as in *N. leucodera*; legs without white, antemarginal tuft whitish grey.

Wings, *upperside*.—Forewing narrow, R^3 and M^1 stalked together; metallic purplish blue from base to middle, this area sinuate distally, followed by a large tawny-orange discal patch, which does not quite reach costal or hinder margin, bordered with metallic purplish blue; this border dentate; distal margin, costal edge, and fringes black; a central subbasal spot white.—Hindwing more triangular than in the other species, the apex being less rounded; olive-black, slightly purplish; a large white basal patch from costal margin to SM^2 , its outer edge crossing M at base of M^2 ; black abdominal border narrow from middle to base.

Underside olive-black, purplish; forewing with a white subbasal patch shaded with olive; an orange-tawny subapical longitudinal patch; white area of hindwing as above.

Length of forewing: 9 mm.

One ♀.

AGARISTIDAE.

34. *Burgena constricta* spec. nov.

♀. Similar to *B. varia* Wlk. (1854); thorax, abdomen, and wings different in pattern. Anterior half of collar orange, posterior black. Mesonotum black in centre, orange behind; tegula orange, with an oblique black line joining anteriorly at side the black belt of pronotum. Abdominal tergites 1 to 6 black at base, orange at apex, 7 black, with the anal tuft orange; abdominal sternites 1 to 6 orange, 7 black, with a few orange scales, a few black scales in centre of 5, anal tuft all orange.

Wings, *upperside*.—Forewing shorter and broader than in *B. varia*, SC^u more distal; a basal streak before cell and a subbasal spot in cell yellowish white; postmedian cell-spot longer transversely than in *varia*, orange-yellow basal streak situated along SM^2 broader than in *varia*, parallel to hinder margin, not to costal margin.—Hindwing: yellow area paler orange than in *varia*, deeply constricted in middle, the cell being entirely black.

Underside.—Markings of forewing yellowish white.—Hindwing: a basal costal patch sulphur-yellow, separated into streaks by the blackish veins; yellow area constricted as above, but the posterior patch enlarged basad, filling up the area between cell and abdominal edge, some scattered scales near base and part of SM^2 remaining black.

Length of forewing: 22 to 24 mm.

Two ♀ ♀.

35. *Argyrolepidia palaea* spec. nov.

♂ ♀. Head olive-black above ; a line behind eye and ill-defined spots on frons white. Palpus olivaceous black, first segment and a dorsal line on second yellow, second segment irrorated with white scales. Thorax above purplish olive-black, collar not edged with white, but marked with some orange at side ; breast and femora orange, tibiae and tarsal segments tipped with white, a small white spot in middle of tibiae. Abdomen olivaceous black, with bluish reflections, the segments edged with bluish white ; claspers of ♂ with pale yellow hair-scales ; last sternite (7th) of ♀ unicolorous, olivaceous, black.

Wings, *upper side*.—Forewing brown, strongly purplish, a spot beyond middle of cell and a band on disc whitish, vestigial ; a few scales at base and some beyond the vestigial discal band violet-blue ; fringe black.—Hindwing black, with moderately strong blue gloss, a large central patch light blue, metallic, oblique, produced basad in front ; a white marginal spot behind M².

Underside purplish black.—Forewing : a dot in cell and a band on disc bluish white, with some blue scales at the edges, the band extending from C to M², slightly narrowing costad, not interrupted, feebly curved ; a patch at base situated in and before cell pale blue.—Hindwing : a pale blue patch at base about twice as wide between lower angle of cell and abdominal margin as between lower angle of cell and costal margin, the posterior portion extending about 3 mm. beyond angle of cell ; outside this area a widely interrupted blue band (♂) or two blue spots ; a white marginal spot as above, but larger ; no white spot in centre of wing.

Length of forewing : ♂ ♀, 18 to 22 mm.

One ♂, 2 ♀ ♀ ; type : ♀.

36. *Argyrolepidia lunaris* spec. nov.

♂ ♀. Similar to *A. palaea*. Frons more extended white ; breast and femora paler yellow ; tibiae and first tarsal segment densely irrorated with white ; last abdominal sternite of ♀ fringed with yellow.

Wings, *upper side*.—Forewing : metallic blue markings more numerous, white cell-spot and discal band more distinct, the band narrow in front, wider behind, interrupted at the veins, ending at costal edge in a blue dot ; a white marginal spot just below apex.—Hindwing glossy blue, appearing black in certain positions, white patch outside cross-veins, obliquely halfmoon-shaped, encircled with metallic blue, this blue scaling extending to base of wing and present also along SM² ; a white marginal spot below apex, and usually several other white marginal spots farther back.

Underside bluish or purplish black.—Forewing : cell-spot rectangular ; discal band not broken up, but angulate at R² ; a metallic pale blue basal patch.—Hindwing : a metallic pale blue basal area as in *meeki* ; a white central spot as above, separated from the blue area by a black interspace, except behind, where the blue scaling which encircles the white spot is continuous with the blue area ; fringe-spots as above, the additional dots more distinct ; a minute blue dot on disc behind SC².

Length of forewing : ♂ ♀, 21 to 22 mm.

Three ♂♂, one ♀.

NOCTUIDAE.

Eucocytia gen. nov.

♂ ♀. Palpus hardly reaching frons in ♂, a little longer in ♀ than in ♂, slightly porrect, third segment minute, second shorter than first. Eye hairy. Antenna clubbed, a little compressed, the same in both sexes, club a little wider in ♂ than in ♀, slightly thinning at apex, which is obtuse; scaly area of antenna restricted to a narrow stripe, scaling smooth, non-scaled surface densely covered with minute hairs, some very short sensory bristles at apex of each segment. Hindtibia somewhat incrassate; tibial spurs short, being about as long as the tibia is broad, external spur a little longer than inner; two pairs to hindtibia.

Neuration: forewing with areole, SC¹ free, SC² and SC³ from areole, SC⁴ and SC⁵ stalked together, R¹ from upper angle of cell, R² and R³ close together, from lower angle, M¹ a little before angle: hindwing, cell about two-thirds the length of wing, SC² and R¹ from upper angle, R¹, M¹ and M² from lower angle, close together, but separate, M² from three-fifths of cell.

Type: *E. meeki* spec. nov.

37. **Eucocytia meeki** spec. nov.

♂ ♀. Head and underside of thorax woolly, black, the wool on metanotum, abdomen, and legs also black, smooth scaling of abdomen and legs metallic glossy blue, purplish; pro- and mesonotum, except base of femur, carmine; claspers of ♂ also carmine.

Wings, *upper side*.—Forewing: distal margin convex before middle, costal margin convex at base, then slightly concave to near apex; black-blue, a broad metallic blue band at base, a broad metallic golden green band from costa to near hinder margin, narrowing behind, produced distad upon the veins, its inner edge slightly curved, crossing M between M¹ and M², or at base of M¹.—Hindwing somewhat shorter in ♂ than in ♀, rounded at apex; slightly emarginate before anal angle, black-blue, metallic greenish blue distally.

Underside metallic greenish blue, purple at hinder margin of forewing, a broad central stripe on both wings of ♂ black from near base to near distal margin, the scales being suberect and directed forward.

Length of forewing: ♂, 25 mm.; ♀, 30 mm.

One pair. The ♀ was obtained during the first expedition to Owgarra.

38. **Buzara calodesma** spec. nov.

♂ ♀. Sexes similar; body and legs black, rather slightly metallic blue, somewhat woolly, robust.—Wings, *above*, black, slightly bluish on hairy basal abdominal area of hindwing.—Forewing with a band extending from base along costal margin to near apex of cell, and then turning backwards in an even curve ending at hinder margin close to angle, costal portion of band red, rest yellow, the band on the whole very little wider in ♀ than in ♂; tip of wing yellow.—Hindwing not abbreviated in ♂, in both sexes with yellow fringe from middle of costal margin close to anal angle, apex and distal margin evenly rounded; R² very close to R³.

On *underside* the yellow portion of the band of the forewing wider than above.

Length: ♂ ♀, 27 to 31 mm.

A long series.

PYRALIDAE.

Vitessidia gen. nov.

♂. Palpus very long, curved over the head; second segment the longest, reaching to apex of collar, widened apically, being densely clothed on dorsal side (*i.e.* underside) by somewhat prolonged erect scales, the distal portion of the segment resembling a clothes-brush; third segment thin, smooth, widening apicad, obliquely truncate, about one-third the length of the second. Eye sparsely hairy. Antenna long, three-fourths of forewing, ciliated. Tibiae without tufts, almost smoothly scaled. First segment of tarsi very long, almost twice the length of the others together in foretarsus.

Neuration peculiar: forewing, cross-vein before middle of wing, very deeply incurved, SC^1 and SC^2 stalked together, from cell close to angle, SC^1 branching off at one-third to apex of wing, anastomosing at once with C' , SC^3 stalked with SC^4 and SC^5 , the latter being the most distal branch, R^1 from the same stalk at one-fourth from cell, R^2 and R^3 on a long stalk, the pale cross-vein standing close behind M^1 ; hindwing, R^1 connected at one-third from cell by a short bar with stalk of $C'SC^2$, the bar representing the proximal portion of the branch SC^2 , this vein being broadly anastomosed with C' ; cross-vein angulate, upper one-third situated approximately of middle of wing, oblique lower portion terminating in middle of wing a little beyond M^1 , R^2 and R^3 on a long stalk.

Type: *V. diaphana* spec. nov.

39. **Vitessidia diaphana** spec. nov.

♂. Black, bluish; frons white; underside (= dorsal) of second segment of palpus grey, some scales on frontal side also grey; pronotum, except a blue-black middle belt, segments 6, 7 and 8 of abdomen, breast, coxae and underside of femora yellow-chrome.

Wings, *upperside*, black, slightly bluish; a large space on forewing from near base to fork $R^2.R^3$, expanding between C' and SM^2 , a narrow subapical band from $SC^{1,2}$ to M^1 , and on hindwing a very large area from near base beyond fork $R^2.R^3$, rounded distally, sinuous, limited by C' and SM^2 , transparent but scaled, opalescent in side-view, the veins remaining thinly black; a minute streak of milky white scales at base of forewing before C' .

Underside as above, transparent area of hindwing edged with white proximally near base.

Length of forewing: 25 mm.

One ♂.

CHALCOSIIDAE.*

40. **Heteropan alberti** spec. nov.

♂. Head and thorax above purplish olive, not glossy; antenna metallic purple above; upperside of abdomen metallic blue, strongly glossy; palpus and forecoxa creamy white, breast, underside of abdomen and legs metallic creamy white, slightly purplish, glossy; tibiae and tarsi somewhat clayish.

Wings, *upperside*.—Forewing greenish black, olivaceous, slightly purplish

* *Pidorus eriegdes* Swinhoe, *Ann. Mag. N. H.* (7), xvi, p. 146, n. 11 (1905) (Woodlark) is the insect which we described as *Heteropan meeki*, the ♀ in *Nor. Zool.* iii, p. 325 (1897), the ♂ *ibid.* vi, p. 439 (1899). Both sexes are figured *ibid.* viii, t. 9, fig. 5, 6, (1901).

in middle, not glossy: a submarginal band of metallic green spots, extending a short distance basad behind costal margin, stopping posteriorly at M^1 ; $SC^{4,5}$ stalked with $SC^{4,5}$ but situated close to cell, R^1 from cell.—Hindwing metallic pale blue, strongly glossy, purple in certain lights; fringe creamy white in upper two-fifths; R^2 and R^3 stalked together, M^2 from middle of cell.

Underside metallic white from base beyond cell, distal margin metallic pale blue, purplish, this colour extending along costal margin to one-half; hinder margin of forewing olivaceous, purplish.

Length of forewing: $8\frac{1}{2}$ mm.

One ♂.

Herpolasia gen. nov.

♂ ♀. Frons conical, strongly projecting, rounded. Thorax and base of hindwing woolly.

Neuration: Forewing, SC^1 anastomosed or connected with C , SC^2 free, $SC^{1,2}$ and SC^3 on a long stalk, SC^5 from this stalk near cell, R^1 close to upper angle of cell, veins R^2 to M^2 from cell.—Hindwing, veins SC^2 to M^2 from cell.

Type: *H. augarra* spec. nov.

41. Herpolasia augarra spec. nov.

♂. Body black, purplish; upperside of abdomen metallic bluish green, legs partly greenish blue, a thin occipital belt and the anal tuft orange; underside of abdomen spotted with white; branches of antenna very long.

Wings, *upperside*.—Forewing black, not glossy, washed with green, and at costal and distal margins and round apex of cell with purple; a double dot near base, a halfmoon before middle of cell and a subapical dot creamy white, small.—Hindwing olive-black, metallic blue from base to three-quarters, a spot on cross-veins and a large patch behind cell white.

Underside olive-black.—Forewing with dispersed metallic blue scaling from base to apex of cell, a spot before middle of cell, a larger one on cross-veins and an apical dot creamy white.—Hindwing: a broad streak from base to middle of cell, with some scattered scales farther distad, and abdominal margin from SM^2 backwards, metallic blue; white spots as above, a little larger, the white post-cellular patch slightly bordered with blue distally.

♀. Body as in ♂, but head and a large spot on mesothoracic tegula white, abdomen without white spots beneath, glossy blue above; branches of antennal segments about half as long as in ♂.

Wings, *upperside*.—Forewing uniformly green-black, with four creamy white spots from base to apex, third the largest, apical one the smallest, all larger than in ♂.—Hindwing glossy blue, except the woolly base and the distal and costal marginal borders, the distal border ill defined, gradually narrowing abdominad, the blue colour reaching close to fringe at anal angle.

Underside glossy blue for the greater part; forewing with three white spots, the basal one of upperside being here absent; hindwing with a white dot on cross-veins.

Length: ♂, 18 mm.; ♀, 22 mm.

One pair.

Chalcosia (?) *albomedia* Rothschild, *Nor. Zool.* iv. p. 309, n. 6. t. 7. f. 6 (1897) (Kapaur, Dutch New Guinea), belongs also to this genus.

42. *Doclia cincta* spec. nov.

♂. Body black, with a feeble purple gloss, somewhat metallic, legs dirty clay-colour beneath.

Wings, *upper side*.—Forewing black, with purple reflections, not glossy; a mesial streak at base and two spots beyond middle yellow, the one spot subcostal, proximally of end of cell, the other behind base of M^1 ; SC^3 vestigial, SC^4 missing; R^1 stalked with SC^{3+4} .—Hindwing velvety black, a large elongate-ovate yellow area obliquely from costal margin near base toward apex of M^2 , its hinder edge parallel to abdominal margin.

Underside as upper; forewing less purplish, the basal streak larger, the two postmedian yellow spots merged together to a band; yellow area of hindwing larger, extending close to base of cell.

Length of forewing: 13 mm.

One ♂.

43. *Doclia* (?) *melaleuca* spec. nov.

♀. Antennae shortly pectinated proximally, dentate distally.

Head and pronotum pale yellow; mesonotum white; rest of body black, legs clayish.

Wings, *upper side*.—Forewing truncate as in *Heteropan*, with three subcostals, SC^3 and SC^5 being missing, R^1 stalked with SC^4 , R^2 and R^3 on a short stalk; chalky white, an olive-black border to distal edge, about 1 mm. wide, extended at apex of wing to cell, the costal portion being $1\frac{1}{2}$ mm. broad, abruptly stopping at cell, but extreme costal edge black to base.—Hindwing smoky black, with slight purple gloss, sealing for the greater part white at base of wing and along abdominal margin, fringe white, except at apex.

Underside olive, with slight purple gloss.—Black border of forewing as above, but less sharply defined.—Costal edge of hindwing, a broad streak in cell, extending to apex of wing, and two streaks between cell and abdominal margin more or less covered with white scales, such scales dispersed over the whole wing; radial and median veins from cell.

Length of forewing: 12 mm.

One ♀.

44. *Caprima tricolor* spec. nov.

♀. Face creamy white; a broad belt behind eyes pale yellow, whitish beneath; rest of body and legs blue, somewhat glossy; antenna luteous at joints, shortly pectinate proximally, dentate distally; tarsi lutescent.

Wings, *upper side*.—Forewing: base black, metallic blue; a broad white oblique subbasal band washed with yellow; rest of wing black, with purple reflections; an orange subcostal spot beyond apex of cell.—Hindwing black at base and along abdominal margin from SM^1 backwards, more or less metallic blue, apical third of wing also black, slightly purplish, this area widest at apex, narrowing to a point behind, connected with the abdominal streak by some black scattered scales before SM^1 ; rest of wing white.

Underside as above, the metallic and the purple sheen vestigial, the white areas of both wings and the orange spot of forewing somewhat enlarged.

Neuration: Forewing with three subcostals only, first at four-fifths of cell, second before angle, third at angle close to R^1 , M^2 a very little more proximal than SC^1 .

Length of forewing: 10 mm.

One ♀.

HEPIALIDAE.

45. *Charagia sordida* spec. nov.

♀. Head, pro- and anterior portions of mesonotum olive-green, rest of thorax and legs greenish olive-buff; abdomen greenish olive; eye and head small.

Wings, *upperside*.—Forewing narrower than in the allied species (*cyanochlora*, *marginatus*, etc), apex acute, produced, the distal margin being somewhat concave in upper half; greenish olive-buff, irrorated with the usual olive bars; a straight shadowy line from four-fifths of costa obliquely across disc, including some silvery spots edged with pink; two brown submarginal spots SC^5-R^2 ; fringe not spotted.—Hindwing dirty mummy-brown, with feeble pinkish reflection, slightly greenish at distal and costal edges.

Underside dirty mummy-brown, washed with green costally and distally, and with pink on disc, costal edges marked with greenish olive spots.

Neuration: branches of subcostal fork on forewing a little shorter than, on hindwing as long as, the stem.

Length of forewing: 40 mm.

One ♀.

46. *Porina salmonacea* spec. nov.

♂. Head and palpus mummy-brown; thorax tawny-olive above and below, slightly pinkish; metanotum and proximal tergites of abdomen salmon-buff, posterior tergites pale cinnamon, sternites olivaceous buff, antenna pale buff, compressed, segments constricted at bases, narrow ventral surface and apical edge of each segment (except end-segment) with fringe of hairs; tibiae and tarsi appearing broad in consequence of long scaling.

Wings, *upperside*.—Forewing clayish buff or more ochraceous; behind costa from base to middle three or four creamy white spots, sometimes divided, occasionally partly or all absent or vestigial, encircled with black, the third the largest, in outer half four or five rows of black spots, mostly minute, partly with creamy centres, those of a postdiscal row more or less merged together to a line.—Hindwing salmon-buff at base, pinkish buff distally.

Underside pinkish buff, washed with salmon-colour, costal edge of hindwing yellowish buff.

Length of forewing: 22 to 30 mm.

A series of ♂♂.

SOME NEW SIPHONAPTERA.

(Plates XIII. XIV.)

BY THE HON. N. C. ROTHSCHILD, M.A.

1. *Pulex roberti* spec. nov. (PL. XIII. fig. 1, 2).

THIS species is allied to *P. australis* Rothsch., but can be distinguished by the following characters:—

Head.—The rostrum and the second segment of the maxillary palpus are longer, the latter being more than twice the length of the third segment.

Thorax.—The sternum of the mesothorax bears two bristles instead of one.

Abdomen.—The first three tergites bear two complete rows of bristles. The anterior row becomes gradually reduced on the other tergites, especially in the ♂.

Legs.—All the femora bear on the outer side three bristles ventrally near the apex, and one on the inner side. On the outer side of the hindfemur there are five or six lateral bristles placed irregularly on its apical third. Anteriorly to these there is a row of three or four bristles, this row being separated from the three subapical ventral bristles by a wide interspace. On the inner side the hindfemur bears only one or two lateral bristles. The tibia have on the outer side very numerous bristles, as is the case in *Pulex bohlsi* Wagn. On the inner side of the hindtibia there are two or three bristles. The sixth dorsal incision of the hindtibia is rudimentary, however, one of the two bristles situated in this incision in other *Pulicidae* being present. The fourth incision (which is homologous to the fifth of other species) is not so deep in the present species as it is in *P. australis*. The tarsi, which in *P. australis* and *P. elephontis* Rothsch. somewhat resemble the tarsi of *Malacopsylla* (= *Megapsylla*), are more normal in the present species. The second segment of the foretarsus is nearly three times as long as it is broad, being much longer than the first. The mid- and hindtarsi bear numerous hairs on the ventral surface. The apical spines of the tarsi are stout, except on the fourth segment. The longest apical spine of the first hindtarsal segment reaches to the subapical spine of the second, and the corresponding spine of the latter segment almost extends to the apical spine of the third. The first hindtarsal segment is two-thirds the length of the tibia. The fifth segment bears four lateral bristles and a ventral mesial row of about four hairs, besides a pair of apical ventral spine-like bristles. The claw is smaller than in *P. australis* and *P. elephontis*. The measurements of the mid- and hindtarsi are as follows:—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus, ♂ . . .	15	20	13	7	17
" ♀ . . .	20	27	15	7	19
Hindtarsus, ♂ . . .	50	36	22	11	22
" ♀ . . .	59	42	24	11	24

Modified Segments.—The finger is longer and slenderer than in *P. australis*. The manubrium (Pl. XIII. fig. 1, m) is broader. The ninth sternite (ix. st.) is also broader, and bears many more hairs. The eighth tergite of the ♂ (Pl. XIII. fig. 2)

has about half a dozen bristles above the stigma, one of them being stout. The bristles at the ventral edge of this tergite are more numerous than in *P. australis*. The anal sternite is longer than in *P. australis*, and the stylet somewhat thinner.

Pulex bohlsi Wagn., which we only know from Dr. Wagner's description and figure, is a similar insect. The present species, however, differs from it in having the second segment of the maxillary palpus and the end-segment of the rostrum longer. The mesothoracical sternum bears in *bohlsi* three bristles, and the epimerum of the mesothorax six. The bristles on the hindfemur and those on the eighth abdominal section are different in position; the first foretarsal segment of *P. bohlsi* is practically the same in length as the second, and the apical spines on the metanotum and first abdominal tergite are larger in number in *P. bohlsi* than in the present species.

Length: ♂, 2.4 mm.; ♀, 3 mm.

We have nine examples of this species collected by Mr. A. Robert, as follows:—

6 ♂, Sao Paulo, Brazil, November 22, 1901. *Didelphys aurita*.

3 ♀, " " " " 24 " *Nictomys squamipes*.

2. *Pulex scopulifer* spec. nov. (Pl. XIII. fig. 5).

Head.—The frons is not notched. There is a vertical row of three eye-bristles, two of the bristles standing in front of the eye and the third at the genal edge. The occiput bears two bristles above the antennal groove and a complete subapical row of hairs, besides the usual row of short bristles placed along the antennal groove. The rostrum reaches to the apex of the forecoxa.

Thorax.—Each of the thoracical nota bears one row of bristles. The mesothorax bears one bristle on the sternum and four on the epimerum. The metathoracical epimerum has two vertical rows of bristles, the first containing eight, the second five to seven.

Abdomen.—There is one row of bristles on each tergite, except on the first, where there are two rows. On the seventh tergite there is a single apical bristle placed on a cone which projects far beyond the edge of the segment—a character peculiar to this species. The cone bears a minute hair on each side. The first sternite bears one ventral bristle on each side, while there is a row of four or five on the following four sternites, the sternite of the seventh segment bearing a row of seven or eight, with an additional bristle in front of them. The stigmata are rounded, and are placed above the first bristle.

Legs.—The mid- and hindcoxae bear two bristles posteriorly at the apex. There is a comb of four to six spines on the inner side of the hindcoxa. The hindfemur is obtusely angulate ventrally towards the base. It bears on the outer side two subventral bristles near the apex, and on the inner side a subventral row of four, of which two are placed before the middle and two farther back. On the outer side of the hindfemur there are two rows of bristles, the more dorsal row being incomplete. There are also two thin hairs at the ventral edge of the hindfemur in addition to the apical and subapical ventral bristles. The dorsal bristles of the tibiae are stout. One of the subapical hairs of the foretibia is short, very heavy, and blunt. The longest apical bristle of the foretibia is not so long as the tibia is broad. The longest bristle of the fifth pair of bristles of the hindtibia is hardly longer than the tibia is broad. The first foretarsal segment is a little shorter than the second. The longest apical bristle of the hindtarsus reaches

nearly to the apex of the second segment, and the longest of the latter extends to the base of the fifth segment. The fifth segment of the foretarsus bears three apical ventral bristles, of which the middle one is long and the other two are short and stout. On the mid- and hindtibiae these bristles are represented by only two thinner ones, the posterior lateral bristle being absent. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	12	14	9	6	15
Hindtarsus . . .	35	24	14	9	19

Modified Segments. The large eighth sternite bears about twenty-five bristles on each side. The clasper (Pl. XIII. fig. 4) has two free processes ; the one (r) is finger-shaped, bearing some minute hairs at the edge, while the other (p) is short and covered with very heavy bristles. One of these bristles is rather strongly bent. The manubrium is slender and linear, being slightly bent downwards at the apex. The ninth sternite (ix. st.) is somewhat razor-shaped, being truncate at the apex. It bears a number of minute hairs, as shown in the figure. The spiral of the penis forms two-thirds of a whorl only. At the apical edge of the ninth tergite (bearing the sensory plate) there are laterally three bristles, two of which are long.

Length : 2 mm.

This species is easily recognised by the prominent cone on which the apical bristle of the seventh abdominal tergite is placed, and by the sexual armature.

We have one ♂ example of this species from *Saccostomus campestris*, collected by Mr. C. H. B. Grant at Umfolozi, Zululand, on July 1st, 1904.

3. *Ceratophyllus calceatus* spec. nov. (Pl. XIII. fig. 3. 4).

Head.—The frontal tubercle is very distinct. There is a row of three eye-bristles and above them two additional bristles, besides some short hairs. The occiput bears in or behind the middle two lateral bristles, one above the other, and a subapical series of hairs. This series is widely interrupted, the interspace between the first and second bristles being twice the width of the interspace between the second and third. The eye is ovate in shape. The club of the antenna is three times (♂) or twice (♀) as long as it is broad. The rostrum reaches a little beyond the apex of the forecoxa. The first segment of the labial palpus is longer than the second, while the second, third and fourth are about equal in length. The fifth segment is longer than the third and fourth taken together.

Thorax.—The pronotum is a little longer dorsally than the dorsal spines of the comb. It bears one row of bristles and a comb of nineteen (♂) or twenty (♀) spines. The mesonotum bears two rows of bristles and on the back some additional hairs, besides an irregular double row of small hairs at the base. There is also a subapical series of four to six slender spines on each side. The mesothoracal sternum bears four bristles laterally in the centre and some minute hairs near the upper angle. The epimerum of the metathorax bears six bristles (3. 2. 1). There are two rows of bristles on the metanotum, besides two or three hairs on the back in front of them. There is also one short apical spine on each side. The episternum of the metathorax bears two bristles and a small hair, the latter not being always present, and the sternum has a single bristle. The bristles of the metathoracal epimerum are seven in number (3. 3. 1).

Abdomen.—All the tergites bear two rows of bristles. The second row, which contains seven bristles on each side on tergites 2 to 7, is curved, especially in the ♀. The seventh tergite bears in the ♂ one subapical bristle accompanied by a small hair on the ventral side, but in the ♀ there are two long bristles similarly placed. These bristles stand at some distance from the apical edge. The first sternite bears one ventral bristle. The following four sternites have in the ♂ a row of two or three and in the ♀ a row of three or four hairs, the fourth being much shorter than the others. There are also one or two hairs in front of this row in the ♀. On the sternite of the seventh segment there is a row of five or six bristles, with two shorter hairs in front.

Legs.—The mid- and hindcoxae have two bristles posteriorly at the apex. The hindfemur bears on each side one subventral bristle near the apex, and on the inner surface towards the base another small bristle. The mid- and hindtibiae bear no hairs at the anterior (or ventral) edge, except the apical and subapical bristles. There is one row of lateral bristles on the outer side of these tibiae, and on the inner side of the hindtibia also a row of four to six bristles. The first hindtarsal segment has three lateral pairs of bristles on the anterior side, and four to six on the posterior. Near the posterior lateral bristles there are on this segment from one to three bristles. The longest apical bristle of this segment reaches a little beyond the base of the subapical pair of the second segment. The longest apical bristle of the second segment does not reach the apex of the third. The fifth segment is broad. It bears four lateral bristles, besides a subapical hair, and there is also a ventral pair of bristles in between the first lateral pair. The measurements of the mid- and hindtarsi are as follows :

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus, ♂ . . .	19	17	14	9	19
" ♀ . . .	23	20	13	10	19
Hindtarsus, ♂ . . .	15	30	22	12	20
" ♀ . . .	50	31	21	11	20

Modified Segments.—The eighth tergite of the ♂ is large. It bears a number of small hairs above the stigma. At the apical edge there are five or six long bristles and on the lateral surface seven or nine more. The eighth sternite is small but quite distinct (Pl. XIII. fig. 4, viii. st.). The process of the clasper (Pl. XIII. fig. 4, c) is rounded, bearing two small hairs at the top. The finger (F) is shaped like an inverted boot, the dorsal edge representing the sole. It bears a bristle at the apex and three more at the ventral edge, besides a short hair situated near the upper proximal angle. There are two very long bristles at the junction of the finger with the clasper. The ninth sternite (ix. st.) bears an elongate-ovate apical flap, which is widest at the apex. We cannot make out the exact outline of this sternite. The seventh sternite of the ♀ is obtuse, being obliquely rotundate-truncate (Pl. XIII. fig. 3, vii. st.). The eighth tergite (viii. t.) bears a number of short hairs above the stigma and a long bristle and three short hairs near it. The segment is emarginate at the apex, with the ventral angle somewhat more projecting and less rounded than the upper angle. There are at the apical edge three bristles and one short spine-like hair. Proximally of these there are three more bristles, and farther down and still more proximal six additional ones. The eighth sternite (viii. st.) is very narrow and long. It is rounded at the apex (lateral

view), and bears at the apical edge some extremely fine and short hairs. The stylet is about three times as long as it is basally broad. The anal sternite bears on each side two long apical bristles and some stout ventral ones, besides numerous thin hairs.

Length : ♂, 3.2 mm. ; ♀, 3.6 mm.

We have one pair of this species from Bukit Besar, 2500 ft., State of Nanggichik, Eastern Malay States, May 15th, 1901, from *Sciurus nigrovittatus*, kindly sent to us by Mr. H. Robinson.

4. *Ceratophyllus robinsoni* spec. nov. (Pl. XIII. fig. 6).

♀. Allied to *C. ahalae* Rothsch., but differs in the following characters :—

Head.—The frontal part of the head bears a few less bristles. The subapical row of bristles of the occiput is widely interrupted, the second bristle of that row not being developed. The rostrum reaches to the apex of the forecoxa.

Thorax.—The pronotum bears a comb of twenty teeth. The metanotum has three rows of bristles, and in front of them some dorsal bristles representing a fourth row.

Abdomen.—There are two long apical bristles on the seventh tergite, placed on a double cone. Below them there is a third bristle, not situated on a cone. Tergites 2 to 7 bear on each side one rather long black apical spine, and tergite 5 one spine on one side only. The basal sternite bears about ten short hairs laterally near the base and three bristles at the ventral edge, the posterior bristle being the longest. The sternites of segments 3 to 6 have a row of four long bristles and eleven to fifteen shorter bristles in front of the row, the bristles being still more numerous on the seventh segment. The seventh sternite bears a deep and narrow sinus (Pl. XIII. fig. 6, vii. st.). The stigmata stand in front of the middle row of bristles. They are situated on a level with the third long bristle of the posterior row or above the second bristle, except on the second and seventh tergite, where the posterior row of bristles extends less far downwards.

Legs.—The first foretarsal segment is shorter than the second. The lateral bristles of the fifth segment are thinner than in *C. ahalae*, and there are only two short spine-like bristles ventrally at the apex of the fifth fore- and midtarsal segments instead of four.

The measurements of the tarsi are as follows :

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	24	22	14	8	17
Hindtarsus . . .	73	49	26	14	21

Modified Segments.—The eighth tergite (Pl. XIII. fig. 6, vii. t.) bears a few short hairs above the stigma and none below it. The ventral apical angle is produced. Above this projection there are two pairs of bristles, and farther back about fourteen more bristles. The eighth sternite bears a few minute hairs at the apex. The stylet is slightly conical, being about four times as long as it is broad. It bears one long bristle at the apex accompanied by two very minute hairs. There is one bristle at the corner of the tergite, beneath the stylet. The anal sternite bears long bristles only, nine in number.

Length : ♀, 4 mm.

We have one specimen of this species from Bukit Besar, 2500 ft., State of Nanggehik, Eastern Malay States, May 17th, 1901, from *Sciurus nigrovittatus*.

We are indebted to Mr. H. Robinson for this species.

5. *Ceratophyllus vicinus* spec. nov. (Pl. XIII. fig. 7).

Closely allied to *C. agrippinae* and *C. dorippae* Rothsch., but distinguished by the following characters:—

Head.—The rostrum is shorter than in the species mentioned and the relative lengths of the segments different, the last segment being twice the length of the last but one. The eye is vestigial. It has no pigment.

Thorax.—The pronotal comb consists of twenty-four spines in the ♂ and twenty-eight in the ♀.

Abdomen.—The numbers of apical spines on the tergites are as follows: 17, 12, 7, 5, 1.

There is no bristle beneath the stigma on tergites 5 to 7. The seventh tergite bears three apical bristles in both sexes. The sternites of the present species have one or two bristles less than those of *C. agrippinae*.

Legs.—The hindfemur bears five to seven bristles at the ventral edge behind the basal sinus, instead of the one pair found in *C. agrippinae*. There are two ventral subapical bristles on the outer side, as in *C. agrippinae*. The first hindtarsal segment is proportionally much longer than in *C. agrippinae*, the proportions being almost the same as in *C. dorippae*. The first and second midtarsal segments are shorter than in *C. dorippae*. The measurements of the mid- and hindtarsi are as follows:

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus, ♂ . .	26	15	10	8	17
„ ♀ . .	30	18	12	9	19
Hindtarsus, ♂ . .	52	34	15	10	18
„ ♀ . .	55	38	17	11	20

Modified Segments.—The eighth sternite of the ♂ bears only eight bristles above the sinus and two short ones farther back, besides six to eight below the sinus. The two processes of the clasper (Pl. XIV. fig. 7) are of nearly the same length, while in *C. agrippinae* the second process is much the longer of the two. The finger is very much broader in the new species, and bears a heavy bristle at the ventral edge near the base (f). The manubrium is pointed. The seventh sternite of the ♀ is more distinctly emarginate than in *C. agrippinae*.

We have a pair of this species from *Herpestes badius*, collected by Mr. C. H. B. Grant at Wakkerstroom, Namaqualand, Cape Colony, March 1904.

6. *Ceratophyllus stratiotes* spec. nov. (Pl. XIV. fig. 8).

Head.—The frons is notched. There are three long bristles before the eye, which are placed in an obtuse triangle some distance from the eye. Between the second bristle and the oral edge there is further a short bristle, and above the third bristle two more. The occiput bears one lateral bristle and a widely interrupted subapical series, the second bristle of this row not being developed. The small hairs along the antennal groove stand rather far apart. The eye is evenly rounded

anteriorly. The rostrum reaches almost to the apex of the forecoxa. The last segment is nearly twice the length of the last but one. The first antennal segment bears numerous small hairs at the apex. The club is about four times as long as it is broad, the segments being sharply separated.

Thorax.—The pronotum bears one row of bristles and a comb of twenty-one teeth. There are three rows of bristles on the mesonotum, besides some additional short dorsal bristles and a basal row of rather long thin hairs. Three long slender subapical spines are placed on each side. The sternum bears a nearly horizontal row of three bristles in the middle and some short hairs near the upper corner. On the epimerum there are eleven bristles. The metanotum, which is shorter than the mesonotum, possesses one apical spine on each side and three rows of bristles, the anterior row being quite irregular. The episternum and sternum have each one bristle, while there are ten on the epimerum.

Abdomen.—The first tergite bears four rows of bristles, the other tergites two, with some additional bristles representing a third. The number of spines on the two sides together are: 2. 4. 2. 2. 2. The seventh tergite bears two long stout apical spines placed on a double cone. Proximally of, as well as below them, there are a few hairs. The stigmata are round, and stand above the first bristle of the posterior row. There is no bristle on the basal sternite. The following sternite bears two bristles and the next three sternites three, all having two shorter ones in front of them. On the sternite of the seventh segment there is a row of three long bristles, with three additional shorter ones in front.

Legs.—The bristles of the mid- and hindcoxae are few in number. There are two posteriorly at the apex. All the femora bear a small subventral hair near the apex on both sides, and a minute lateral hair near the base on the outer surface. There is on the hindfemur also a minute ventral hair behind the subbasal sinus. The mid- and hindtibiae bear at the ventral edge three hairs besides the apical and subapical ones, and there are on the outer and inner sides one row of bristles. There are no bristles on the ventral surfaces of the mid- and hindtarsi, apart from apical bristles. The lateral bristles are short. The longest apical bristles of the first hindtarsal segment reaches the middle of the second segment. The fifth segment is broad. It bears five pairs of lateral bristles, the first pair being strongly and the third less strongly dislocated towards the middle. The measurements of the mid- and hindtarsi are as follows:—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	21	17	11	7	20
Hindtarsus . . .	58	34	23	13	22

Modified Segments.—The eighth tergite is large and apparently* triangular. It bears about fourteen bristles at the edge from the stigma backwards, and about as many on the side. There is a single long bristle near the ventral margin behind the middle. The process of the clasper (Plate XIV., fig. 8, *p*) is very short and obtuse, while the finger is long and slender (*f*), bearing some minute hairs at the edge, as shown in the figure. The two bristles at the junction of the finger with the clasper are long and placed some distance apart. The manubrium (*m*) is also

* The single example of this species we possess is mounted as a microscopic slide, and is consequently somewhat distorted in shape.

very slender, and is slightly dilated at the apex. The ninth sternite (ix. st.) is broad; it is sinuate beyond the middle, with the distal angle of the proximal portion somewhat projecting distad.

Length: ♂, 3.7 mm.

We have one ♂ of this species from the Benito River, Spanish Gaboon, collected by Mr. W. Bates. The host is not known to us. We are indebted to Mr. W. de Winton for the specimen.

Macropsylla gen. nov.

♀. Closely allied to *Hystrichopsylla*. The rostrum consists of eleven to thirteen segments in the only species known. There is a row of spines situated along the ventral edge of the head as well as along the antennal groove (Pl. XIV. fig. 9). The eye is vestigial, situated at the base of the uppermost spine. The chitin of the occiput is internally thickened in the middle, as indicated in the figure. The episternum of the metathorax is about twice as long as it is broad. The fifth tarsal segment has four lateral bristles, besides a thin subapical hair, and a ventral pair of bristles in between the first lateral pair. There are two bursal copulatrices, as in *Hystrichopsylla*. The eighth sternite is absent, while the tergite is completely divided dorsally in the mesial line.

The posterior angle of the gena, underneath the antennal groove, has developed into a spine (Pl. XIV. fig. 8). This spine corresponds to the posterior row of genal spines met with in *Stephanocircus*, while the continuous row of spines extending in *Macropsylla* from the anterior oral corner to the vestigial eye is homologous to the row of spines situated along the hinder edge of the helmet in *Stephanocircus*.

7. Macropsylla hercules spec. nov. (Pl. XIV. fig. 9, 10).

Head.—The frons (Pl. XIV. fig. 9) is quite different in outline from that of *Hystrichopsylla*, being rounded as far down as the first genal spine. There are six genal spines at the ventral edge and three at the edge of the antennal groove. The genal process beneath these spines is also armed at the apex with a short broad spine. The frons bears seven long bristles, and is covered, moreover, with numerous short hairs. The occiput bears four rows of bristles, and above the antennal groove a row of short hairs. The space in front of and above the first row of bristles is punctured. The rostrum does not quite reach to the apex of the forecoxa. The maxillary palpus is much shorter than in *H. talpae*, but the proportional length of the segments is about the same as in that species.

Thorax.—The pronotum bears three rows of bristles and a comb of twenty-eight to thirty-four spines, besides some additional bristles in front of the first row. The mesonotum is very hairy, bearing four rows of bristles and numerous shorter hairs situated between these rows and the base. There are dorsally before the apex two long slender spines on each side. On the sternum of the mesothorax there are about thirty bristles, most of them standing in the upper half, and there are about eighteen on the epimerum. The metanotum bears four rows of bristles. There are two vertical rows of bristles on the episternum, with two additional bristles in front, the epimerum bearing about twenty-seven bristles, the middle and posterior ones being arranged in two vertical rows.

Abdomen.—There is a comb on segments 2 to 5, the first three combs

being uninterrupted on the back, while the fourth comb is slightly interrupted by small dorsal mesial interspace; the numbers of teeth are 43, 44, 47, and 41. The tergites 1 to 7 all bear four rows of bristles, the anterior row being quite irregular and partly doubled on tergites 2 to 7. There are three long apical bristles on the seventh tergite, the middle one reaching nearly to the apex of the last segment, the ventral one being only a little shorter, while the dorsal one is less than half the length of the middle bristle. The apex of this segment is produced between the two sets of apical bristles. The first sternite is very hairy on the sides and along the ventral margin. The following four sternites bear a row of four or five long bristles and a patch of shorter ones in front of them, these long and short bristles being more numerous on the seventh sternite. This sternite is broadly and shallowly emarginate.

Legs.—There are three bristles posteriorly at the apex of the mid- and hind-coxae. The hindfemur bears on the outer side a subventral row of about nine bristles and on the apical third of the outer surface about twenty bristles. The foretibia has no stout bristles laterally at the apex between the stout dorsal and ventral apical bristles as is the case in *Hystrihopsylla talpae*. The hindtibia has eleven or twelve dorsal incisions bearing stout bristles. The outer surfaces and ventral edges of the tibiae are hairy, while the inner surfaces are bare of hairs. The longest apical dorsal bristle of the midtibia reaches a little beyond the apex of the first tarsal segment, while that bristle of the hindtibia does not reach the base of the subapical pair of bristles of the first tarsal segment. The fifth tarsal segment is proportionally shorter than in *H. talpae*, and the dorso-lateral bristles of this segment are much longer. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	58	36	21	15	24
Hindtarsus . . .	102	70	40	20	25

Modified Segments.—The eighth tergite (Pl. XIV. fig. 10) is triangular, with the apex rounded off. It bears very numerous bristles, as shown in the figure. The bristles are somewhat variable in number and position. The eighth sternite is apparently altogether absent. The plate belonging to the ninth segment, being situated between the eighth tergite and the sensory organ, is very distinct (Pl. XIV. fig. 10, ix. t.). The stylet is subcylindrical, becoming slightly narrower from the base to the apex.

Length : 5.2 mm.

We have two ♀ specimens of this species from Lannceston, Tasmania, one from *Mus relativus* and the other from *Mus spec.*?, both collected by Mr. A. Simson.

Uropsylla gen. nov.

♀. The ventral margin of the head is dilated behind the palpus into a rounded lobe projecting downwards (Pl. XIV. fig. 11). This lobe bears two bristles which form a continuation of a row of three of which two are situated beneath the eye and one behind it. The eye is very large and stands at the antennal groove. The genal process is, immediately behind the eye, dilated into a truncate flap which partly covers the club of the antenna. The first segment of the antenna is very large,

being longer than, and as broad as, the club. It bears a large number of short hairs. The second segment is fringed with long hairs, which do not however reach to the apex of the club. The latter is globular and covered with minute hairs, the segments being separated from one another. The hairs are especially dense on the first and the last segments. The proximal surface of the first segment of the club has the appearance of being reticulated. There is no internal thickening of the chitin from the upper end of the antennal groove to the dorsal edge of the head. The pronotum is about four times as long dorsally as it is laterally, appearing almost hammer-shaped in side view. It bears a comb of long spines. The episternum of the metathorax is larger than the sternal plate when viewed from the side (as on the slide). The abdominal tergites 1 to 7 bear short, broad, triangular apical spines. There are *no* apical bristles on the seventh tergite. The eighth tergite is large. It is triangular, with the apical angle rounded off, the oblique distal margin being about half as long again from the stigma to the apex as the ventral margin from the apex to the base. The eighth sternite is small, triangular, and concealed in the tergite, being hairy at the upper and apical edges. The sensory plate is large, being about twice as long as it is wide. The anal segment is as long as the sensory plate. The fifth tarsal segment bears five lateral bristles, besides a thin apical hair. There are no fine hairs on the ventral surface of this segment. It bears, however, two short stout bristles at the apex, one placed obliquely behind the other, and proximally of them a pair of short slender hairs. There is one *bursa copulatrix*. The cavities into which the stigmata open are large and rounded.

The insect for the reception of which we have to propose the present genus does not fit into *Ceratophyllus* or any other genus. In respect to the triangular eighth abdominal tergite the insect resembles *Macropsylla*, described above, but in other respects the genera *Macropsylla* and *Uropsylla* are markedly different.

It is, of course, impossible to decide from one species which characters are of generic value and which only of specific. We have no doubt, however, that some of the very striking characteristics mentioned above will be found in other species, when the Australian Pulicid fauna become better known.

8. *Uropsylla tasmanicus* spec. nov. (Pl. XIV. fig. 11, 12).

Head.—The head (Pl. XIV. fig. 11) is about as high as it is long. It is evenly rounded in front. There is no frontal notch. In addition to the row of bristles situated beneath the eye there are two rows before the eye, and two more bristles above these, besides a number of short hairs situated above the eye. The occiput, which is punctured dorsally like the frons, bears a great number of small hairs from the base of the antennal groove to the middle of the same, and a regular row of rather stouter hairs from here to the ventral corner. There are laterally two pairs of bristles, and near the hinder edge a row of seven long bristles on each side. The rostrum does not reach to the apex of the forecoxa. The labial palpus consists of five segments, of which the first four are nearly of equal length, while the last is half as long again. The first segment of the maxillary palpus is longer than the fourth and half as long again as the second, the third being hardly half the length of the first.

Thorax.—The pronotum bears one regular row of bristles and a comb of thirty spines. The mesonotum is covered with short and rather stout hairs all over from the base to the postmedian row of long bristles. The episternum bears also many

similar hairs. The metanotum has four irregular rows of short stout bristles, besides additional dorsal hairs and a postmedian row of long bristles. There is a comb of seven short apical spines on the two sides together. The large metathoracic episternum bears dorsally a long bristle with a short hair below it, and anteriorly a vertical row of four to six more, and a ventral, nearly horizontal, row of three beside. There is one bristle on the sternum. The epimerum, which is very much higher than it is wide, bears a row of seven bristles anteriorly, another row of four from the stigma downwards, and two bristles in between the rows, besides two small hairs, one of which is placed above and one beneath the uppermost bristles of the second row.

Abdomen.—The tergites 1 to 7 bear two rows of bristles, the first and second tergites possessing in addition a short third row; this third row being represented by two or three bristles also on the third and fourth segments. Both rows of bristles extend down beyond the stigmata, except on the seventh segment. The number of apical spines on the tergites are on the two sides together : 7. 9. 11. 9. 6. 4. 2. The basal sternite bears on each side about twenty hairs and at the ventral edge a long bristle and more proximally several finer ones. The following four sternites bear a row of six long bristles and in front of them four to six shorter ones. The sternite of the seventh segment has a row of seven or eight bristles and six to eight hairs before this row.

Legs.—The mid- and hindcoxae bear posteriorly at the apex four or five bristles. The hindfemur has ventrally on the outer side a row of five long bristles from the apex forward, the row being continued anteriorly by two shorter bristles, which are preceded by two more bristles standing a little separate from the ventral edge. On the outer surface the hindfemur bears an irregular row of seven or eight bristles and a subdorsal row of four or five. The bristles on the outer side of the midfemur are a little less numerous. The mid- and hindtibiae have nine dorsal incisions. The sixth and apical incisions bear the longest bristles. The longest apical bristle of the midtibia reaches nearly to the middle of the second tarsal segment, while that bristle of the hindtibia extends to the apex of the first segment. There is one row of seven bristles on the inner side of the hindtibia and two and a half rows of bristles on the outer side, besides numerous hairs situated at and near the anterior edge. The first foretarsal segment is two-thirds the length of the second. The first and second segments of the midtarsus are almost equal in length, while the first hindtarsal segment is very much longer than the second. The apical and subapical bristles of the hindtarsus are stout and rather short, the longest apical bristle of the first segment not reaching to the apex of the second. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus . . .	27	25	17	13	27
Hindtarsus . . .	58	35	26	15	30

Modified Segments.—The seventh sternite (Pl. XIV. fig. 12, vii. st.) is obliquely sinuate, the lobe above the sinus being rounded and the lobe below the sinus being slightly bi-emarginate. The eighth tergite is completely divided dorsally in the mesial line. It bears very numerous short hairs at the edge and on the lateral surface (Pl. XIV. fig. 12).

Length, 4.6 mm.

We have one ♀ example of this species from Launceston, Tasmania, from *Dasyurus viverrinus*, collected by Mr. A. Simson.

9. *Ctenopsyllus ellobius* spec. nov. (Pl. XIV. fig. 13. 14. 15).

Head.—The frons is evenly and strongly rounded, the lower portion sloping backwards, especially in the ♂ (Pl. XIV. fig. 13). There is a vertical row of five genal spines. The vestige of an eye is placed above the uppermost spine. The side of the frontal portion of the head bears one very long bristle, and several shorter ones, as shown in the figure. The occiput bears three oblique rows of bristles, besides the subapical row. The first antennal segment is large. The second is produced apically anteriorly, the projection extending in the ♀ beyond the middle of the club, and in the ♂ to the fourth segment of the club. The rostrum extends to the subapical row of bristles of the forecoxa.

Thorax.—The pronotum bears two rows of bristles and a comb of twenty-eight teeth. The mesonotum has two slender subapical spines on each side, and three rows of bristles, bearing numerous additional hairs, between the first row and the base. There are three oblique rows of bristles on the metanotum, and laterally near the base an irregular fourth row. The apex of the metanotum is denticulate. The epimerum of the metathorax bears four more or less irregular rows of bristles, twenty to twenty-three altogether.

Abdomen.—The tergites 1 to 6 are denticulate dorsally at the apex. The second to fifth bear laterally, not dorsally, short stout apical spines, which vary in number, there being in the ♂ on one side 6. 6. 9. 2, and on the other 6. 6. 6. 2, while in the ♀ the numbers are 4. 4. 6. 0, and 4. 4. 4. 0. There are four rows of bristles on all the tergites. The anterior row, however, is represented in the ♂ by a few dorsal hairs only. The stigmata are pointed behind, and stand on the middle segments above the third or fourth bristles of the last row, but much nearer the base of the segment. The seventh tergite bears three heavy apical bristles, the middle one being more than twice the length of the dorsal one. The basal sternite has a number of hairs at the ventral edge, and bears an oblique lateral row, the hairs in this row being more numerous in the ♀ than in the ♂. The sternites of segments 3 to 6 bear in the ♀ a row of four or five long bristles, in front of which there are three rows of shorter ones, the anterior row being irregular. In the ♂ the number of bristles is reduced, there being only one row before the long bristles, with some additional hairs in front, representing the two anterior rows of the ♀. The number of bristles is larger on the seventh sternite, especially in the ♀, which bears seven bristles in the last row.

Legs.—The hindcoxa, which is devoid of a comb of spines on the inner surface, has four bristles posteriorly at the apex. There is an irregular lateral row of minute hairs on the outer side of the forefemur, and two subapical ventral bristles, there being in the ♂ several additional small hairs above that row. The mid- and hindfemora bear ventrally near the apex on the outer side three bristles, and on the inner side one small hair. The outer side of all the tibiae is covered with hairs, these hairs being arranged in three or four irregular rows on the hindtibia. This tibia bears at the dorsal edge nine stout bristles of nearly equal length, four of them being accompanied by a long one. The bristles of the tarsi are numerous and rather stout. The longest apical one of the second hindtarsal segment does not

quite reach the subapical pair of the third segment. The fifth segment bears four lateral bristles and a subapical hair, besides a ventral pair standing in between the first lateral pair. The measurements of the mid- and hindtarsi are as follows :—

	First segment.	Second segment.	Third segment.	Fourth segment.	Fifth segment.
Midtarsus, ♂ . . .	30	21	13	8	18
" ♀ . . .	35	24	14	9	18
Hindtarsus, ♂ . . .	53	40	22	13	20
" ♀ . . .	60	45	24	14	20

Modified Segments.—The eighth sternite of the ♂ is very large, and bears about thirty bristles, besides some short hairs. The eighth tergite bears numerous short bristles on the back. The clasper, which is not separated from the tergite of the ninth segment by a suture, but is much more strongly chitinised than the portion of the segment between the clasper and the sensory plate, is not produced backwards, being oblique and bearing at the edge five long bristles (Pl. XIV. fig. 14, cl.). The finger is very long (f). It bears one stout, short, obtuse spine at the apex, and many minute hairs on the ventral edge, there being also some hairs on the dorsal edge. The manubrium (m) is very broad and curved upward apically, being an inner projection of the whole lateral and dorsal portion of the ninth segment, inclusive of the sensory plate. The ninth sternite (ix. st.) is club-shaped, and bears some bristles at the ventral edge, as shown in the figure. This sternite reminds one of that of *Hystriohopsylla talpae*, but the "boomerangs" of the two sides appear to be completely separated from one another. The anal segment is longer than the sensory plate, and conical, bearing numerous bristles. The seventh sternite of the ♀ is bi-emarginate, the upper sinus being wide and the lower small and very shallow (Pl. XIV. fig. 15, vii. st.). The eighth tergite (Pl. XIV. fig. 15, viii. t.) is very hairy above and below the stigma. The apex is bisinuate. The anal tergite is longer in the ♀ than in the ♂, and very bristly. The anal sternite is somewhat oblong, as in *Pulex irritans*, and bears very numerous and heavy bristles at the truncate apex. The stylet is subconical, being about six times as long as it is basally wide.

Length: ♂, 3.4 mm.; ♀, 4.2 mm.

We have four examples of this species collected by Mr. C. H. B. Grant, as follows :—

1 ♂, Sibudeni, Zululand, December 28, 1903. *Mus spec.*

2 ♂, Wakkerstroom, Namaqualand, Cape Colony, April 30, 1904. *Crocidura flarescens*.

1 ♀, Wakkerstroom, Namaqualand, Cape Colony, April 30, 1904. *Crocidura flarescens*.

ERRATA IN TWO PREVIOUS PAPERS ON SIPHONAPTERA.

VOL. XI. Page 653, line 6 from bottom, read Cowichan (Duncans), Vancouver Is.

VOL. XII. Page 168, lines 10 and 12 from top, read Carpenter's Mt., Cariboo District, B.C.

" Page 170, line 12 from top, read Allan Brooks.

NOTES ON SOME OF THE *LYCAENIDAE* COLLECTED BY
DOHERTY ON THE KIKUYU ESCARPMENT, NOW IN
THE TRING MUSEUM.

By GEORGE T. BETHUNE-BAKER, F.L.S., F.Z.S.

SOME little time ago I was looking over these Lycaenidae in the Tring Museum, and I noticed one or two new species, and certain points of interest in other species, that seem worthy of being recorded. I do not, however, deal with the subfamily *Lipteninae*, merely confining myself now to the Lycaeninae.

1. *Lachnocnema durbanii* Trimen.

Rare in November and December.

2. *Deudorix dohertyi* spec. nov.

♂. Palpi whitish, with end segment black and naked. Face whitish or pale cream-colour. Primary leaden grey, with a large subquadrangular yellowish tawny patch in the medial and postmedial area, extending from near the middle of the inner margin up to the end of the cell, keeping vein 5 as its upper edge with its outer margin slightly oblique, and terminating on the inner margin in front of the tornus. Secondary yellowish tawny, with the base, inner and costal margins leaden grey, termen finely black. Fringes of both wings dark grey for the inner half, the outer half cream-colour.

Underside: both wings tawny grey with slightly darker spots palely edged. Primary with a quadrate spot closing the cell, the postmedial series consisting of six spots somewhat flattened, the first three subconfluent, the second three shifted inwards also subconfluent; the subterminal row consists of small sublunular spots. Secondary with two subbasal small black dots, one below vein 8 and one in the cell; a pale spot on the inner margin, a quadrate spot closes the cell; the postmedial row consists of eight spots, the second shifted well outwards, the third and fourth confluent shifted slightly out, fifth and sixth confluent shifted well inwards, seventh slightly angled yet further in, eighth spot, a long one, shifted slightly outwards; submarginal row as in the primary, but followed by a row of short fine dashes, termen finely dark, a dark lobe spot, a slight dark scaling between veins 1 and 2, and a small blackish spot between 2 and 3, edged slightly internally with pale yellowish.

Expanse: 30 mm.

The type from the Kikuyu Escarpment is in the Tring Museum.

3. *Deudorix antalus* Hopf.

A common species, differing in no way from the usual form.

4. *Myrina ficedula* Trimen.

One specimen, quite typical.

5. **Hypolycaena philippus** Fab.

Rare, of the typical form.

6. **Stugeta bowkeri** Trimen.

Not common.

7. **Iolaus silas** Westw.

One specimen only.

8. **Iolaus sidus** Trimen.

Rare ; somewhat brighter than the southern form.

9. **Axiocenses perion** Cram.

The commonest of the whole group. The undersides are very much paler and more uniform than the West African form, and are also paler than the form from the low country ; the upperside, however, is as bright as usual.

Lycaenesthes.

There are several species of this intricate genus, some in considerable numbers ; but as I am now preparing a revision of the African species of the genus, I shall deal with them later on.

Cupido.

I fear I cannot follow Aurivillius, able author and observer though he is, in his wholesale sinking of genera, and I therefore place the various species under the genera that are more generally accepted.

10. **Uranothauma cordatus** Sharpe.

A common insect ; the ♀ of this species is whitish with a basal silvery blue suffusion, and two rows of dark spots on the primary, and very broad borders.

11. **Uranothauma nubifer** Trimen.

Not rare, but less common than the other two species.

12. **Uranothauma poggei** Dewitz.

A common species, the ♀ of which is pale yellowish brown, with a broad dark termen to the primary, a posterior fractured row of dark spots, and two dark spots in the cell.

13. **Cacyreus lingens** Cram.

Very common, and quite typical.

14. *Cacyreus palaemon* 'Gram.

Common.

15. *Syntarucus telicanus* Lang.

By no means common.

16. *Azanus moriqua* Willgr.

One specimen.

17. *Azanus jesous* Guérin.

Not common.

18. *Azanus ubaldus* 'Gram.

A rare species, but typical.

19. *Everes masai* sp. nov.

♂. Both wings violet blue. Primary with the costa and termen very narrowly black. Secondary with the costa somewhat broadly brown; termen narrowly black; tail very fine, white tipped, above which is a small dark spot. Fringes greyish white, darker towards the extremities.

Undersurface whitish grey. Primary with a black spot finely encircled with white closing the cell, postmedial row consisting of six isolated black spots encircled with white, with a trace of a very small one on the costa; the first four spots are curved outwards, the second being the farthest out, the fifth spot is shifted well inwards, and the sixth slightly outwards; there is a double subterminal row of dark lunules edged with white; termen is black and linear. Secondary with two subbasal black dots, one in the cell and one below vein 8, followed below by a minute black point on the inner margin; above the pale brown spot closing the cell is a black spot on the costa; below it is another black spot on the inner margin; the postmedial row consists of six pale brown spots, the first below vein 7 isolated, the second shifted right outwards confluent with the third, fourth and fifth, which take a distinct inward curve, the fifth being farthest inwards, sixth spot shifted slightly outwards; an irregular pale brown subterminal band followed by a terminal row of pale brown spots; termen black linear; above the tail is a velvety black spot slightly edged above with metallic blue scales, above which is an orange yellow lunule. All the spots and bands are palely edged.

♀. Primary greyish brown, with a small patch of bright violet blue, restricted to the median and lower basal areas. Secondary with the blue less restricted, reaching almost to the submarginal row of dark dots, each of which dots is preceded by a pale blue lunule; the black spot at the tail is edged internally by a patch of orange-yellow. The underside is precisely like that of the male.

Expanse: ♂ and ♀, 27—28 mm.

The type is in the Tring Museum from the Kikuyu Escarpment.

20. *Cupido boeticus* L.

Not common.

21. *Cyclyrius aequatorialis* Sharpe ; and 22. *C. sharpiae* Btl.

There is a fairly long series of these species, which are, I believe, one and the same ; the white band of the underside of the secondary is sometimes intersected and sometimes entire, while there are many specimens in various grades of connecting forms.

23. *Lycaena sichela* Wllgr.

One specimen only.

24. *Lycaena malathana* Boisd.

Rare ; only four specimens.

25. *Lycaena dolorosus* Trimen.

Not uncommon ; with more white on the undersurface of the secondaries than usual.

26. *Lycaena cnejus*.

One typical specimen.

27. *Lycaena pulchrestriata* spec. nov.

♂. Palpi blackish, fringed below with long white hairs ; and at the tip of the second segment, in addition to the white, are a quantity of longer fine blackish hairs as well ; end segment not fringed, white-tipped ; antennae reticulated, white and black ; club blackish, white-tipped ; face white with dark centre ; abdomen dark with marked bluish pale grey segmental divisions. Primary brownish grey, with a very restricted pale violet-blue basal suffusion ; all the veins stand out broadly pale bluish grey, those above vein 4 being narrower and greyish white ; cilia dark grey, paler for the outer half. Secondary pale, slightly silvery violet-blue, with a terminal row of largish black spots ; termen whitish, finely edged externally with black ; cilia dark, outer half pale whitish grey ; tail fine black tipped with white.

Undersurface : Both wings brownish ashy grey with black spots encircled with white. Primary with a short black dash at the extreme base and two spots in the cell—a round one in the middle, a long one closing the end of the cell, below the former below vein 2 another spot rather nearer the base ; the post-medial row consists of six spots distinctly fractured below the fourth, the fifth and sixth being shifted basewards immediately below the spot closing the cell ; beyond this row is a band of white-edged black confluent lunules followed in the white terminal area by a row of subterminal oval blackish spots. Secondary with a black spot at the extreme base of the cell, followed below by one on the inner margin ; two spots in the cell as in the primary ; above the first spot is a second near the costa, postmedial row consisting of eight irregular spots, the first two distinct, the lower of which is shifted slightly outwards, spots 3, 4, and 5 curved almost confluent shifted farther out, but with the lower spot curved inwards to near the spot closing the cell, sixth spot shifted right inwards well below that spot, seventh spot shifted right outwards, and eighth right inwards, outside this row, but following closely its course is a broad irregular orange

red band; above it on the costa is a small black spot; outside and adjoining this red band is the subterminal row of black spots; terminal area white, with the linear termen black; the whole of this row is more or less strongly edged internally with pale metallic bluish.

♀. Both wings greyish brown, with the orange-red band of the underside of the secondary showing through, beyond which is the subterminal row of spots, followed by the white termen. Underside exactly like the male.

Expanse: ♂ and ♀, 25—26 mm.

The types from the Kikuyu Escarpment are in my collection. I have only seen this species from this escarpment. I have it in my own collection, and there is a good series in the Tring Museum. It is like nothing with which I am acquainted.

28. *Scolitantides stellata* Trim.

This pretty little insect is common.

29. *Zizera gaika* Trim.

Not common.

30. *Zizera pygmaea* Snellen.

Not common.

31. *Zizera lysimon* Hb.

Not very rare.

32. *Zizera lucida* Trimen.

An uncommon species.

33. *Chilades trochilus* Freyer.

Quite typical, not uncommon.

34. *Heodes orus* Cram.

Fine and large specimens, but not common.

The great majority of the species here enumerated were taken in the months of November, December, and January, at altitudes varying from 6,500 to 10,000 feet.

MISCELLANEA ORNITHOLOGICA.

CRITICAL, NOMENCLATORIAL, AND OTHER NOTES, MOSTLY ON PALAEARCTIC BIRDS AND THEIR ALLIES.

BY ERNST HARTERT, PH.D.

PART II.*

The forms of **PARUS MAJOR**.

ONE of the most difficult groups of birds for the student of closely allied geographical forms, and one of the most interesting ones to the field-observer, is that of the subspecies of *Parus major*. If we study all the Titmice, we find that not only the European Tomtits, but also *minor*, *bokharensis*, *cinereus* and their allies must be treated as subspecies of *major*. That the yellow underside is not an essential character is exhibited by *Parus major aphrodite*, the Cyprus subspecies, which sometimes has a cream-coloured underside; and similar varieties occur frequently in Greece and Spain, occasionally even in Germany. That the greenish back is not more than a secondary character is shown by *intermedius*, which is very closely allied to *bokharensis*, but has a green tinge on the interscapulum, and by *minor*, which is on the back almost as green as *major*, while being deprived of all yellow colour underneath. About the forms of *Parus major* in Europe and North Africa I cannot say more than what I have said in Lief. iii. of my book *Die Vögel der paläarktischen Fauna*; and I can only repeat that they are still somewhat unsatisfactory. More especially we require a series from Spain. I recapitulate here what I have distinguished in my book, and add the tropical forms, which are, in my opinion, less difficult to separate.

1. **Parus major major** L.

Europe to the Altai in the east, and to the Mediterranean Sea in the south.
Terra typica : Sweden.

2. **Parus major newtoni** Praz.

England, Scotland, and Ireland.
At once distinguished by its stout and large bill.
Terra typica : England.

3. **Parus major excelsus** Buvry.

Tunis, Algiers, and Morocco.
The smaller white mark on the inner web of the outer pair of rectrices is generally conspicuous; the yellow on the underside deeper.
Terra typica : Nrakta el Abbia in N. Algiers.

* For Part I. see *Nor. Zool.* 1904, pp. 456-60.

4. **Parus major corsus** Kleinschm.

Corsica and Sardinia. Resident.

Wing 2—3 mm. shorter; the yellow of the underside much duller, more greenish; the white mark on the inner web of the outermost pair of rectrices nearly always more restricted, sometimes almost absent.

In winter *P. major major* occurs occasionally on Sardinia.

Terra typica: Corsica.

5. **Parus major aphrodite** Mad.

Cyprus, Asia Minor, and Greece.

Tarsus rather shorter than in 1, 2, 3, 4; the yellow of the underside deep and bright; specimens with partially or entirely cream-coloured underside not rare.

Terra typica: Cyprus.

6. **Parus major blanfordi** Praz.*

Persia and Palestine.

Underside very pale yellow; general aspect very light.

Terra typica: Persia.

7. **Parus major bokharensis** Licht.

Bokhara, Transcaspia, North Afghanistan (Amu Darja, Merw, Tedjen, etc.).

8. **Parus major turkestanicus** Zarudny & London.

Dsungaria, Turkestan, Syr-Darja (Semiretschje, Dsharkent).

(Cf. *Orn. Monatsber.* 1905, p. 109.)

This subspecies differs obviously from No. 7 by its huge bill, long tail, and great size generally. Unfortunately its description appeared too late for Part III. of my book, and my material being not very large, I did not separate this form.

9. **Parus major intermedius** Zarudny.

Mountain districts of Transcaspia, E. Persia, parts of S. Afghanistan and Baluchistan.

Darker than 7, the interscapulum with a greenish tinge.

Terra typica: Transcaspia.

10. **Parus major caschmirensis** Hart.

Cashmere.

Like *bokharensis*, but darker. Nape-patch darkened with greyish. Outer pair of rectrices almost entirely white; second pair with a wide slate-coloured edge-band on the inner web; third pair with a small white tip on the outer web. Wing 70—78 mm.

* *Parus major zagrosiensis* Zarudny & London, *Orn. Monatsber.* 1905, p. 108, is a clear synonym of *blanfordi*. *Parus major caspius*, id., belongs probably also to the same form.

11. *Parus major planorum* subsp. nov.

Like *P. m. cashmirensis*, of the same pale grey on the upperside, and the white in the tail of about the same extent, but considerably smaller! Wing 64 to 68, and occasionally even 69 mm.

Type: No. "N.J. 201," South Punjab, collected by the late Lieut. E. W. Cleveland. In the Tring Museum.

This interesting form inhabits the plains of Northern India: Punjab, Rajputana, probably south to the Vindhya Range.

12. *Parus major mahrattarum* subsp. nov.

Much darker and somewhat more bluish above than 7, 8, 9, 10, 11. The second pair of rectrices from outside with less white, as the black on the basal half of the inner web reaches the shaft, and the outer web is generally black for more than half its length, though sometimes white with black base and border to the outer web. The central pair of rectrices, which are entirely grey, or grey with a narrow central line, in 7, 8, 9, 10, are black, with only a grey border to the outer webs. The bar across the wing is generally white. Wing about 69 to 74 mm.

Type in the Tring Museum, No. 182, Ceylon 1. x. 1868, E. Holdsworth coll.

Inhabits the Indian Peninsula, from the Vindhya Range southwards, and Ceylon.

13. *Parus major cinereus* Vieill.

Himalayas to Sunda Islands.

I cannot find differences between the birds inhabiting the Himalayas from Simla to Butan, those from Assam and Western Burma, and those from Java, Borneo, Bali, Lombok, Flores to Alor. All these differ at a glance from *P. m. mahrattarum* in having the central pair of rectrices dark grey, with a black line along the shaft. They are also smaller. Wing about 62—67.5 mm.

Terra typica: Java.

14. *Parus major hainanus* subsp. nov.

Hainan.

Only distinguished from *cinereus* by its smaller size (wing only 61 to 64, rarely to 66 mm.), and considerably larger, especially much longer, bill. As a rule the amount of white in the second pair of rectrices is greater than in *cinereus*, but this is not quite constant, as some specimens have less white.

Type No. 58, Hainan, 18. xii. 1902, ♂, collected by Mr. Katsumata, of Japan, who sent 15 adult specimens from various parts of the island. (Cf. Hellmayr, *J.f. O.* 1901, p. 180.)

15. *Parus major commixtus* Swinh.

South China to East Tenasserim and Upper Burma.

Upper back olive-green, wing about 65 to 70 mm. The extent of the olive-green colour varies somewhat, and is sometimes very small. In worn specimens it is sometimes obliterated. The astonishing statement of Mr. Oates (*Fauna of Brit. India: Birds*, I, p. 47) that in Southern China both *minor* and *atriceps* (as Mr. Oates is pleased to call the form correctly named *cinereus*, are

found is without foundation. I quite agree with Mr. Oates that there are "no grounds for the supposition that interbreeding between *minor* and *cineus*" takes place and produces an intermediate race named *commixtus*; but I cannot either admit that this has been "generally supposed." The wild theory that the form *commixtus*, inhabiting an area which is probably larger than Germany, France, and England together, consists of hybrids between *minor* and *cineus*, has been ventilated thoughtlessly, but was certainly not "generally supposed"! In fact, all specimens from South China are, of course, *commixtus*, only what to the superficial observer seems to be *minor* (because somewhat, though by no means quite, similar in colour, but much smaller) is typical *commixtus*; and specimens in which the olive-green on the back is somewhat obscured or abraded have been erroneously said to be *cineus*. Such errors would be avoided if writers would more carefully study the facts exhibited by a series of skins, and consider their geographical distribution, instead of starting groundless theories.

Terra typica: Tingchow, S. China.

16. *Parus major okinawae* Hart.

Okinawa, in the central group of Riu Kiu Islands.

Of the same small size of *commixtus*, but the back is bluish grey, only the upper back, towards the nape, is washed with olive-green. To this form belong the specimens erroneously quoted as *commixtus* from the Loo Choo Islands. Whether *okinawae* occurs also on other islands of the Riu Kiu or Loo Choo archipelago is not yet known, but it is not improbable that other islands of the group are inhabited by similar but distinguishable unknown forms. In the southern Loo Choo islands (Ishigaki) occurs *Parus nigriloris* Hellm. 1900 (= *stejnegeri* Bangs, 1901). This is a very distinct form, and we may perhaps hesitate to join it as a subspecies to the *major* group, though the question of its relations to *major* must be considered when we have made sure whether any other form of the group is found on Ishigaki or not.

17. *Parus major tibetanus* Hart.

Although only a single male is known, it is not possible to unite this specimen with any of the known forms. The type is a very poor skin, but the great amount of white in the tail (outermost rectrix quite white, second white with a slate-coloured border to the inner web only, third with much white on the outer and a white cuneiform patch on the inner web), the strongly curved culmen and long wing separate it from *minor*, with which it agrees in the green upper back and grey rump, and in the colour of the underside.

Terra typica: Chuksam, Tsongpo Valley, Tibet.

(Type collected by Colonel G. A. Waddell).

Cf. Lief. III. of *Vög. pal. Fauna*.

18. *Parus major minor* Temm. and Schleg.

Ussuria, Amurland, Manchuria, N. China, Corea, and northern Japanese islands: Yesso, Hondo, Kiushiu.

Much larger than *commixtus*, and the colours lighter, brighter.

Terra typica: Japan.

Cf. Lief. III. of *Vögel der pal. Fauna*.

The genus LULLULA.

I cannot help recognising this genus. The Woodlark is neither a Crested Lark nor a Skylark. If we do not recognise the genus *Lullula* we must unite *Alauda* and *Galerida*. I have not been able to come to a final conclusion about the subspecies of *Lullula arborea*, but probably at least three or four are recognisable.

(*T. Vög. pal. Fauna*, p. 242.

The genus ALAUDA.

It seems to me unavoidable to separate specifically *A. arvensis* and *A. gulgula*. A form of each seems to inhabit parts of Inner Asia, and the two are sufficiently distinct to keep them separate. The subspecies of the Skylarks are difficult, and much unnecessary difficulty has been created by the unscientific proceeding of Mr. Ehmcke, who gave names to a dozen supposed new forms, disregarding former literature, geographical distribution, and the fact that closely allied subspecies should never be named from live specimens. By accident one or two names of Ehmcke will stand: The West Siberian race, though very near to the South European *cantarella*, is smaller and more greyish, and must be separated under Ehmcke's name *cinerea*. It breeds in West Siberia, but winters at the foot of the Caucasus, in Tunis, Algiers, Egypt, etc., where it is generally confounded with *cantarella*. Many specimens from E. Persia and Baluchistan are more light brownish sandy than *cinerea*. These seem to be breeding there (?) and may be separable from the W. Siberian race. In that case Ehmcke has provided two names, *schach* and *beludschistana*.

I have not been able to examine a good series of the Skylark which is said to breed on the alpine meadows of the Himalayas. It looks so much like the W. Siberian form (*A. arvensis cinerea*) that I have not separated it.

Another form about which I could not come to a decision is one which appears during migration in Sikkim and other places in the Himalaya. It seems to be the form which breeds in the mountains of West China and East Tibet, and which has been named by Bianchi *Alauda inopinata* (*Acres Przewalskianae* p. 338).

The genus EREMOPHILA.

An enormous time has been spent over the genus *Eremophila*, or *Otocorys*, as it is generally called. I have studied the very large material in Tring, the series in the British Museum, a number of specimens from the Petersburg Museum, kindly lent by Dr. Bianchi, and specimens from the museums in Berlin, Sarajevo, Liverpool, and Nieder-Ingelheim. In his work on the genus Mr. Oberholser separates twenty American forms. While the majority of these are very easily recognisable, it is impossible to recognise some of them from Mr. Oberholser's descriptions and with a small series only. Much as I admire Oberholser's elaborate work, I cannot help thinking that he has gone too far in a few cases. I agree with him, on the other hand, that the arctic North American form must be called *E. alpestris alpestris*, and that it is different from the arctic European one, which must be named *E. alpestris flava*. (*T. Vög. pal. Fauna*, p. 255.

I do not think that there is sufficient evidence that two forms of Horned Larks breed regularly in the same area, and I propose therefore to call all forms by trinomials, as local forms of one species. One of the most distinct forms is *teleschowi*, though Sharpe quoted it as a synonym of *eluesi*. Other very distinct forms are Bianchi's *przewalskii* and *khamensis*, while his *montana* is more difficult to recognise, and its distribution is not clear.

The most misleading and erroneous remarks on the genus are those by Seebohm in the *Ibis*, 1884. They only show that the author had not understood the forms about which he wrote at length (*eluesi*, *longirostris* and *brandti*). Dr. Sharpe (*Cat. B. xiii.*), while admitting them as distinct races, mixed up their distribution, and united with *eluesi* the beautiful *teleschowi*. *E. a. penicillata*, *balcanica* and *albigula*, though united by Bianchi, are separable, and I have explained their differences on pp. 261 and 262 of my *Vog. pal. Fauna*.

On AMMOMANES SAMHARENSIS and ASSABENSIS.

On p. 224 of my *Vog. d. pal. Fauna*, in a footnote, I said that *A. samharenis* Shell. from Amba in the mountains of Abyssinia, and *A. assabensis* Salvad. from Assab on the Abyssinian, or rather Danakil, coast, were "identical." This is an absolute error, as I have seen from comparing the types of the two forms. Count Salvadori has already pointed out the differences in a note in the *Ibis*, and I need not, therefore, repeat them here.

On GALERIDA.

My treatment of the forms of the genus *Galerida*, of which I recognised twenty-two as subspecies of *G. cristata* and nine as subspecies of *G. theklae*, has been looked upon in various lights by various ornithologists. If it has been said that my diagnoses were not very satisfactory, then I have not much to answer to this. I admit that it is not always easy to diagnose very closely allied forms, and I hope that others will try to give better descriptions; if my critics conclude from my descriptions that the forms which I have recognised do not exist, then I must object, because it is illogical to say that a form is poor because my description is poor. Let my critics spend as much time over Crested Larks as I have done, and let them examine the same or more material, and they will probably learn something more and criticise me more justly, with more common-sense, if at all. They will then find that I have not recognised enough forms: probably there are after all two reddish-sandy subspecies in Central Tunis, and Erlanger's *deichleri* can be recognised; but at present there is not sufficient evidence. Kleinschmidt has created "*Galerida schlüteri*."* Dr. Bianchi (*Lees Przewalskianae*, p. 347) doubts whether the forms from variously coloured soil are "geographical" forms. Let us say "local" instead of "geographical" forms, and we may be more correct,—but there is no evidence that the variously coloured forms are entirely produced by the soil on which they live, and that they are repeated alike where the soil is similar. This is, in fact, not the case, because the sandy deserts of various countries are not inhabited by entirely similar forms!

* *Orn. Monatsber.* 1904, p. 196. "Steht genau in der Mitte zwischen *Galerida theklae erlangeri*, *theklae theklae* and *theklae harterti*." Is this not a nomen nudum? Where is the exact middle between the two forms?

The isolation and separation has produced other differences—viz. size of wings and bills, and even the colour is nowhere quite the same in isolated areas, though it closely corresponds to that of the surroundings. I hope to illustrate this more explicitly when I have been able to bring together in the Tring Museum series from various districts, with samples of the sand or soil they live on. In which way this assimilation to the soil takes away from the value of these subspecies, is incomprehensible to me. The local forms (subspecies) are of course the products of the country they inhabit, but we do not as a rule know the causes which have produced them. In many cases it is apparently nothing but isolation, and the isolated development of certain characters; in others apparently climate, amount of rainfall, food, etc.; in others again the colour of the surroundings, and this is more especially the case in ground-birds, which are assimilated to the soil, rocks, steppe, sand, etc., which they inhabit. How this assimilation took place we do not, at present, fully understand, but we must carefully study and fix these varieties before we attempt to explain them.

DESCRIPTION OF TWO NEW BIRDS DISCOVERED BY MR. O. T. BARON IN NORTHERN PERU.

By C. E. HELLMAYR.

IN Volume II. of the *Novit. Zool.*, pp. 1—22, the late Mr. Salvin wrote an account on the first collections made by Mr. Baron in Northern Peru, but about the further consignments no full account has as yet been published. Among the birds sent by Mr. Baron to the Tring Museum there are two more new forms, which may be described as follows:—

Thripophaga berlepschi n. sp.

♂. Forehead and crown, as well as rump and upper tail-coverts, pale olivaceous brown, the latter slightly tinged with rufous; nape and back bright cinnamon-rufous, in strong contrast to the colour of the head and rump. Upper wing-coverts bright cinnamon-rufous, the middle and greater series blackish on the inner webs. Quills blackish, cinnamon-rufous on the outer webs, tertials on both webs; tail uniform cinnamon-rufous, a trifle paler than the back. Lores dirty whitish, cheeks and ear-coverts pale brown, faintly washed with cinnamon; round the eye, especially above, there is a slight whitish admixture; sides of the neck and chest bright cinnamon-rufous, throat and chin decidedly paler and more cinnamon-brownish; breast and abdomen pale olivaceous brown, the under tail-coverts pale fulvous brown; axillaries cinnamon-rufous, under wing-coverts ochraceous, quill lining rusty buff. Basal half of the upper mandible horn-coloured, apical half and the lower mandible whitish.

Wing 77; tail 87; tarsus 23; bill $16\frac{1}{2}$ mm.

Type: ♂ ad. Leimabamba, N. Peru, 10,000 ft. elev., July 13th, 1894. O. T. Baron coll. "Eyes orange."

This fine new species is quite unlike any other member of the genus in

coloration. It needs only comparison with *T. fusciceps* Sel. from Bolivia, with which it agrees in having the forehead and crown uniform pale brown. It differs, however, from the Bolivian species by its much longer and rather narrower bill, bright cinnamon-rufous (not pale buffy brownish) back, chest and sides of the neck, considerably darker rufous colour on wings and tail, fulvous-brown crissum, etc. From *T. erythroptalmus* (Wied) and *T. ferrugineigula* (Pelz.) (= *selateri* Berl.) it is at once known by its cinnamon-rufous back and by having no rufous whatever on the top of the head, etc.

I take great pleasure in naming this species after my friend Count Berlepsch, to whom I owe so much of my knowledge of neotropical birds. The Count has seen the type, and agrees with me that it represents quite a distinct species.

Unfortunately, Mr. Baron sent only one specimen of this interesting form, which adds a new genus to the Peruvian avifauna.

***Diglossa pectoralis uncinata* n. subsp.**

Similar to *D. pectoralis pectoralis* Cab. from Central Peru, but at once known by lacking the milky white breast-band, and in having the chestnut of the crissum extended over the middle of the lower belly.

Upper surface, including wings and tail, glossy black, except rump and upper tail-coverts, which are slaty-grey. Sides of the head and throat deep black, but without any gloss; broad mystacial stripe white, across the foreneck a broad pale chestnut band; crissum and middle of the lower abdomen also pale chestnut, rest of underparts deep black. Axillaries and under wing-coverts white. Thighs black. Bill black.

Type in Mus. Tring: ♂ ad. Levanto, Northern Peru, 9000 ft. elev., November 13th, 1894. O. T. Baron coll.

Wing 71; tail 62; bill $13\frac{1}{2}$ mm.

In addition to the type, there are two adults and one young in the Tring Museum, and the British Museum contains three specimens. All were collected by Mr. Baron in October and November 1894 near Levanto, and are exactly alike in the characters pointed out.

This new form might almost be considered a distinct species, but since it evidently represents *D. pectoralis* in North Peru, it is better treated as a subspecies.

ANOTHER NEW *BARBUS* FROM MOROCCO.

By G. A. BOULENGER, F.R.S.

MR. RIGGENBACH, who has added much to our knowledge of the fresh-water fishes of Morocco, has recently made a small collection in the Wed Ksib, containing, along with *Anguilla vulgaris* and *Barbus callensis*, examples of a new species which I propose to name

***Barbus ksibi*.**

Depth of body $3\frac{2}{3}$ to $4\frac{1}{4}$ times in total length; length of head $3\frac{1}{2}$ to $3\frac{3}{4}$ times. Snout obtusely pointed, $1\frac{1}{2}$ to $2\frac{1}{4}$ times as long as eye; diameter of eye, 4 to 6 times in length of head; interorbital width $2\frac{1}{3}$ to $2\frac{1}{2}$ times; mouth inferior, its width $\frac{1}{4}$ to $\frac{2}{7}$ length of head; lips well developed, interrupted on the chin; barbels, two on each side, equal in length, $1\frac{1}{2}$ times to twice diameter of eye, longer than the distance between them. Dorsal III 7—8, last simple ray moderately strong, serrated at the base, $\frac{1}{2}$ to $\frac{3}{5}$ length of head; free edge of the fin convex; its



Barbus ksibi, $\frac{1}{2}$ natural size, with upper view of head and detached third dorsal ray.

distance from the occiput equal to or slightly less than its distance from the caudal fin. And III 5, longest ray $\frac{2}{3}$ to $\frac{3}{4}$ length of head, reaching root of caudal or a little beyond. Pectoral about $\frac{2}{3}$ length of head, not reaching ventral; latter a little shorter, below anterior rays of dorsal. Caudal peduncle about $1\frac{1}{2}$ as long as deep. Scales 41—46 $\frac{8\frac{1}{2}-9\frac{1}{2}}{7\frac{1}{2}-8\frac{1}{2}}$, 4 between lateral line and ventral, 18 or 20 round caudal peduncle. Brownish above, white beneath; fins white. Several specimens, measuring from 100 to 220 mm.

This species is closely allied to *B. setivimensis*, but easily distinguished by the convex shape of the dorsal fin and its weaker spine.

NOTE ON A PECULIAR SECONDARY SEXUAL CHARACTER
FOUND AMONG *GEOMETRIDÆ* AT THE SENSORY
ORGAN SITUATED AT THE BASE OF THE ABDOMEN.

BY KARL JORDAN.

IT was in 1895, I think, when I first gave an opinion on the abdominal sensory organ referred to in the heading of this note, but quite privately. An Australian had returned to London with a collection of insects. Among the Lepidoptera there were some of those well-known Australian *Agaristidæ* which bear in the male a stridulating organ on the wings, the sound being produced by pressing the tarsi against the ribbed scaleless areæ of the wings when in motion. I asked the collector if he had ever noticed the sound made by these insects. "Oh yes," he said: "you can hear it twenty yards off. It's quite a loud tsē-tsē-tsē-tsē." And, picking up a specimen, he added, "Here is the hole they do the whistling with," pointing to the first abdominal segment, which has the appearance of being pierced by a round channel from side to side. "Oh, no," I replied; "you are showing me a *female*, which does not whistle: these ladies don't. Look at the difference in the wings of the two sexes. That transparent space there in the *male* is the whistling organ. This hole is present in both sexes, as you see." And, taking much for granted, I continued, with a confidence worthy of a priest who is trying to convince a layman of the truth of some dogma, "That hole is an ear."

The existence of the basal abdominal sensory organ in various families of moths is well known (Guenée, Sharp, Swinton, etc.). When studying the *Agaristidæ* in 1895, and the *Hypsidæ* (= *Aganaidæ*) in 1895 and 1896, I was much struck by the diverse development of the structure in these two families. To understand the difference, I compared these organs in other families, and found that the moths can be grouped according to the development of this organ. For lack of time I have not been able to complete the researches so far that they can be presented to the scientific public. But I hope to find now and again an occasion to draw the attention to some of the peculiarities of this organ with its kettle-drums and accessory structures. I only mention to-day that the Lepidoptera can be classified into three groups:—

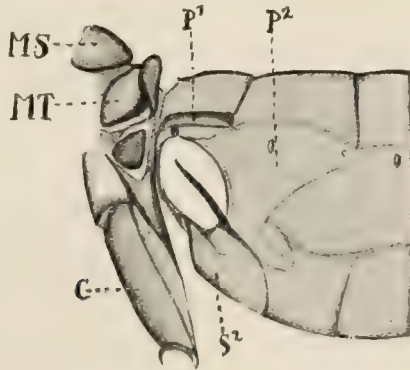
(1) The families which are devoid of the organ: here belong all the Butterflies, the *Notodontidæ*, *Ceratocampidæ*, *Saturniidæ*, *Sphingidæ*, *Bombycidæ*, *Cossidæ*, *Aegeriidæ*, etc.

(2) The families in which the cavity lies underneath the pleura of the **first** abdominal segment, the pleural plate being usually much swollen, and the edge of the mouth of the cavity being more or less vertical: here belong the *Hypsidæ* (= *Aganaidæ*), *Arctiidæ*, *Syntomidæ*, *Noctuidæ*, *Agaristidæ*, etc. In the *Agaristidæ* there is an interspace between the tergite of the first abdominal segment and the pleural plates; the two cavities thus formed, one on each side of the body, are separated in the mesial plane of the body by a vertical transparent

membrane. This tunnel is large in some genera (*Argyrolepidia*, for instance), and comparatively small in others. It is rudimentary among *Noctuidae*.

(3) The families in which the cavity lies underneath the pleura of the **second** abdominal segment ; the pleura of the first segment is small and longitudinal, being placed above the cavity. This is the case, for instance, in *Geometridae*, *Uranidae*, and *Pyrallidae*.

I shall have to refer in another place to the taxonomic value of the organ under discussion. However, one set of characters I think deserves special mention. The organ itself is not glandular, but has in several families been taken into the service of glands restricted to the male sex. Such a secondary sexual character occurs widely among *Geometridae* (to which family I confine my remarks) in connection with the development of a scent-organ situated in the hindtibia. This tibia is swollen in the males of many species, bearing on the innerside a deep slit, from which projects a brush of long stiff hairs when the slit is open. The brush is the distributor of the scent produced by special glands in the tibia, such a brush of hairs being commonly found in Lepidoptera in connection with scent-producing glands. Now, in these males the upper proximal angle of the



EXPLANATION OF FIGURE.

MS = mesonotum ; MT = metanotum ; C = bindeoxa ; P¹ = pleura of first abdominal segment, bearing the first stigma ; P² = pleura of second segment, bearing the second stigma ; S² = sternite of second segment.

sternite of the second abdominal segment (Fig., S²) is produced into a spine-like process which projects free over the cavity of the sensory organ. The hindtibia of the insect lies against this process, and from the position of the scent-brush there can hardly be any doubt that the process is employed to spread the brush out by the tibia being rubbed against it. In fact, when holding a live *Boarmia* by the wings, the working of the hindtibia against the spine and the spreading of the brush can be observed. The process occurs apparently only in *Geometridae*. It is sometimes long, sometimes short, and may be strongly chitinised or may be very weak. One finds such different phyletic stages of development in closely allied species, and it appears to me probable that very often in near allies the process has been lost with the reduction or loss of the tibial scent-organ in some species, and preserved together with the scent-organ in other species. Another question naturally presents itself: does the process occur in all the species of *Geometridae* of which the hindtibia bears a scent-organ in the male? So far, I

can only say that I have not found a species provided with the scent-organ and devoid of the spine. But, considering that the spine is, at least in my opinion, a development secondary to that of the scent-organ, one must expect to meet with *males* which possess the tibial scent-organs, but have not acquired the spreading-rod, possessing perhaps some other arrangement instead.

NOTE ON *MACROPUS RUFUS* DESM., WITH DESCRIPTION OF A NEW SUBSPECIES.

By HON. WALTER ROTHSCILD, PH.D.

MACROPUS RUFUS has for a long time been the favourite Kangaroo of authors, both from its gigantic size, when adult, and also from its beauty. It is therefore more than strange that no one seems to have separated it into subspecies (or geographical races), as has been done with the other large kangaroos. This can only be attributed to the fact that the bulk of the specimens of *M. rufus* reach us alive, and the locality they come from is in most cases not ascertainable.

I have long had in my museum a gigantic male specimen of a form of this kangaroo, which puzzled me for a long time, because it had none of the rich red colour of the ♂ of *M. rufus*, but was coloured blue like a female. I have now alive at Tring a large male with fully developed testes and as big as a *M. major*, though far smaller than the mounted giant mentioned above. This animal is entirely blue, or rather blue-grey, all over, except the chest and legs, which are reddish grey and whitish respectively. The blue-grey is much darker than in most of the females of *M. rufus* I have seen. I have come to the conclusion that these blue-grey animals, which are of this colour in both sexes, come from those parts of Australia, both east and west, to the north of New South Wales, and are a subspecies of *M. rufus*, distinct from the type. I therefore propose to distinguish them as a new subspecies:—

***Macropus rufus dissimulatus* subsp. nov.**

Similar to *M. rufus rufus*, but both sexes deep blue-grey, showing no reddish colour in the male.

Size larger than that of *M. rufus rufus*.

Total length (stuffed ♂, type) about 245 cm.

Head and body about 148; head, $23\frac{1}{2}$; ears, $14\frac{1}{2}$; tail, $96\frac{1}{2}$; hindfoot, 39 cm.

Habitat? but shipped from North-West Australia.

I may here remark that to my mind Mr. Tunney's wonderful find of *Macropus bernardus* has rather altered my views as to the value of cranial characters, in the case of larger kangaroos and wallaroos, for the determination of species as opposed to subspecies; for Mr. Tunney found two kangaroos, *M. robustus alligatoris* Thos. and *M. bernardus* Rothsch., occurring together in one district, which, while externally different enough almost to be placed in different genera, have the skulls practically indistinguishable from those of typical black *Macropus robustus*. This would point to the fact that possibly the four rufous forms considered to be subspecies of *M. robustus* by Mr. Thomas—viz. *M. r. cervinus*, *M. r. woodwardi*, *M. r. isabellinus*, and *M. r. alligatoris*, may prove either quite distinct species, or else subspecies of a red species distinct from *M. robustus*.

NOTES ON TWO KANGAROOS FROM THE "NORTHERN TERRITORY OF SOUTH AUSTRALIA," WITH DESCRIPTION OF A NEW SPECIES.

BY THE HON. WALTER ROTHSCCHILD, Ph.D.

THROUGH the exertions of Mr. Bernard H. Woodward, of the Perth Museum, a number of most interesting forms of the larger species of *Macropus* have been discovered or rediscovered, such as *M. antilopinus* and several forms allied to *M. robustus*. All these were found in Western and North-Western Australia. Owing to the interest aroused by these discoveries, a number of living specimens of these have been imported, and among them I have found a new form, and what I believe to be the long-sought Owen's Kangaroo, *Macropus magnus* Owen. In Mr. Thomas's Catalogue of the Marsupialia and Monotremata of the British Museum *M. magnus*, known only from the type skull, is stated to be closest to *M. rufus*, though the skull has remarkable differences. The kangaroo I am about to describe is certainly near to *M. rufus*, and not a Wallaroo (*M. robustus* subsp.). I will now give a description of this very fine species.

Macropus magnus Owen.

Male adult (living) : Size of *M. rufus*. Hair short and very thick and woolly, as in *M. rufus*, only more exaggerated. Whole of body deep mahogany chestnut. Ears and face blackish, a band on shoulders and at the bend of thighs, forelegs, hindlegs and anterior two-thirds of tail black. Size of *M. robustus*.

Habitat : Northern Territory of South Australia.

Until we can examine the skull it is impossible to be certain that this is the true *Macropus magnus*, but the probability is that it is really this long-lost species, because it is the only one of the recently discovered forms which is really close to *M. rufus*.

I describe the new form as follows :

Macropus argentatus spec. nov.

Male adult : Basal half of ears, occiput, and hindneck, shoulders, and anterior half of body bright dark rufous, washed with purple. Anterior half of ears, face, forearms, lower part of hindlegs, and anterior half of tail blackish. Posterior half of body mixed with black hairs, giving the animal a dark roan appearance.

Female adult : Silvery grey all over, mixed with ashy grey, giving the animal the appearance of a large Chinchilla ; lower flanks almost white ; anterior two-thirds of tail yellowish grey. The young animal is pale grey with a slight shade of red in places. Hair in both sexes very long, thick, and silky.

Habitat : Northern Territory of South Australia. (Type living at Tring.)

This is decidedly a Wallaroo, and allied to *M. robustus* ; but again we cannot decide until we examine the skulls as to its correct status, and so I prefer to name it as a species. The name is given to indicate the colour of the female.

The known races of the Wallaroo are as follows :

Macropus robustus robustus.

Queensland.

M. robustus cervinus Thomas.

Murchison District, South-Western Australia.

M. robustus crubescens Sclat.

Extreme South and South-East Australia.

M. robustus alligatoris Thomas.

South Alligator River.

M. robustus woodwardi Thomas.

South-west part of Kimberley, North-West Australia.

M. robustus isabellinus Gray.

Barrow Island, off West Australia.

NOTES TO PLATE V.

BY KARL JORDAN.

- Fig. 1. *Xanthospiloptygæ catori* Jordan, *Nor. Zool.* xi. p. 443 (1904) (Sierra Leone). Besides the female figured we have now a male specimen, also obtained by D. Cator at Sierra Leone. The pair shows the same sexual difference as is found in *X. poggei* Dew. (1879), to which *catori* is closely related. The first six abdominal tergites of this male are not black above at the base as in the ♀, apart from a small mesial dot at the base of the second (and apex of the first) segment. The two black antemedian spots on the forewing of the ♀ are represented in the ♂ by an uninterrupted band which extends to near SM²; the subapical buff-yellow band is completely separated from the median band, the black interspace being much wider than in the ♀. The forewing is paler yellow and the hindwing deeper red than in the ♀.
- Fig. 2. *Argyrolepidia aequalis integra* id., *l.c.* xi. p. 446 (1904) (Choiseul). We figure here a large ♀ from Isabel, the Choiseul and Isabel specimens not being different. This form looks very different from the forms in which the white area of the hindwing is divided into two comparatively small spots; but we have all the intergradations.
- Fig. 3. *Pais nyassana* Bartel (1903) (Nyassaland). The species is apparently common near Bihé in Angola, whence we have a good series obtained by H. Pemberton in 1901 and by Dr. Ansorge in 1903 and 1904.
- Fig. 4. *Sindris magnifica* Jordan, *l.c.* xi. p. 417 (1904) (Angola). The two specimens collected in 1875 by A. von Homeyer near Pungo Andongo in Angola are yet the only ones we have. Dr. Ansorge did not meet with this conspicuous Pyralid.
- Fig. 5. *Pseudospiris jucunda* id., *l.c.* xi. p. 444 (1904) (Angola). Besides the series of specimens found by H. Pemberton, we have now also a number of individuals procured by Dr. Ansorge in the neighbourhood of Bihé, Angola.
- Fig. 6. *Bargena reducta* Rothsch. & Jord., *l.c.* x. p. 487 (1903) (Kulambangra). This species has been found by A. S. Meek on Kulambangra (Rubiana group), Treasury and Bougainville. In some of the ♀♀ from the last place the orange bands of the abdomen as well as the band on the hindwing are nearly as well developed as in Isabel specimens of *B. splendida* Butl. (1887). Since *splendida* appears to be restricted to Isabel, Guadaluana, Florida (and probably the other more southern islands of the Solomons), *reducta* and *splendida* may turn out to be geographical forms of one species.

- Fig. 7. *Caprimima caeruleescens bougainvillei* : see p. 79 of this volume.
- Fig. 8. *Caprimima caeruleescens isabella* Rothschild, & Jord., *l.c.* viii. p. 422 (1901) (Isabel) : see p. 79 of this volume.
- Fig. 9. *Caprimima caeruleescens mononis* Jordan, *l.c.* xi. p. 443 (1904) (Treasury) : see p. 79 of this volume.
- Figs. 10. 11. 12. *Clerckia miles cybela* : see p. 79 of this volume. The three figures give the range of variation observed in our series of ♂♂. The ♀♀ are not quite so variable as the ♂♂.
- Fig. 13. *Theretra palistratus* Rothschild, *l.c.* xi. p. 440 (1904) (Dinawa, Brit. N. Guinea). The type was collected by Mr. Pratt. The species has not been met with by A. S. Meek, who was at too high an altitude for Sphingidae.
- Fig. 14. *Rothschildia tucumani* Dognin (1901) (Tucuman). Syn.: *R. steinbachi* Rothschild, *l.c.* xi. p. 601 (1904) (Tucuman). We are sorry to have redescribed this interesting little species. We have now also the larvae, cocoon and chrysalis of it, collected by Herr J. Steinbach. A description of them will be given later.
- Fig. 15. *Melanitis ansorgei* Rothschild, *l.c.* xi. p. 451 (1904) (Aruwimi Forest). The two specimens procured by Dr. Ansorge in 1899 are the only ones we have so far received. It is doubtless a forest insect, which easily escapes notice.
- Fig. 16. *Tueria thomensis* Jordan, *l.c.* xi. p. 445 (1904) (St. Thomé). The metallic markings of the forewing do not come out well in the figure.
- Fig. 17. *Delias schoenbergi choiseuli* Rothschild, *l.c.* xi. p. 453 (1904) (Choiseul).
- Fig. 18. *Rothia panganica* Karsch (1898). We have several specimens from Nguelo, Usambara. The species is related to the Malagasy *R. rhavo* and *alluaudi*.

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EXPLANATION OF THE PLATES.

PL. I.

- Fig. 1. *Ophisaurus koellikeri*.
,, 1a. ,, ,, upper surface of head.
,, 2a. *Lacerta ocellata*, upper surface of head.
,, 2b. ,, ,, ,, ,, ,,

PL. II.

- Fig. 1. *Lacerta ocellata*.
,, 2. ,, *marialis*.



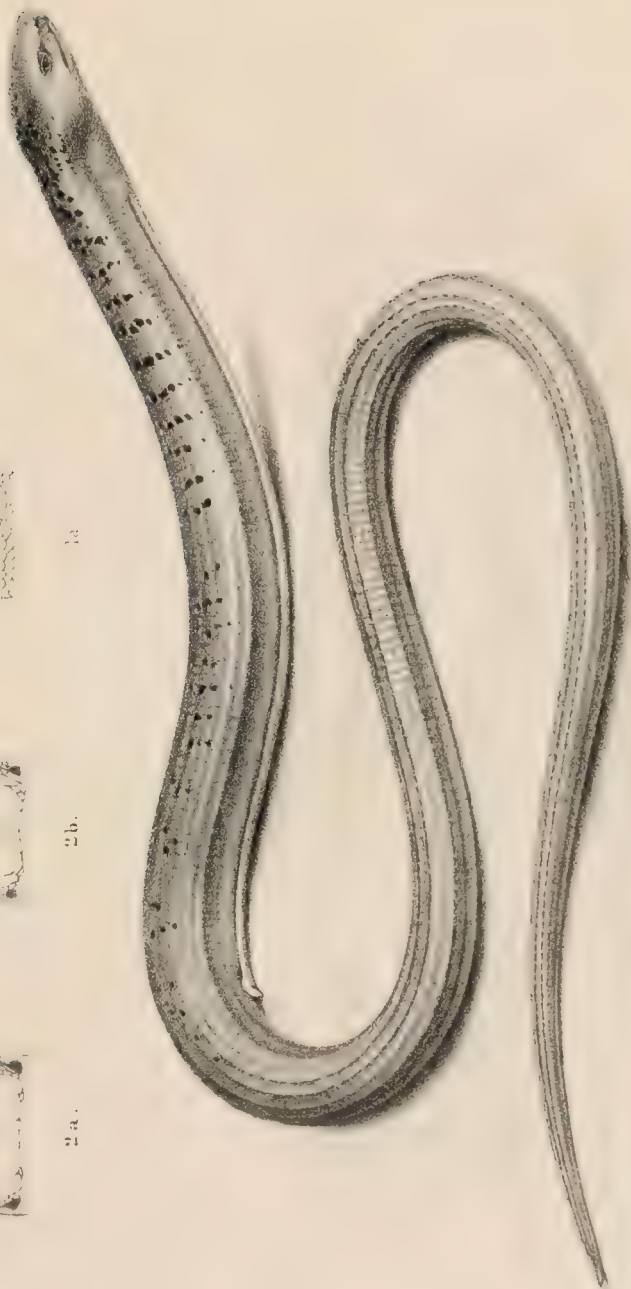
2 a.



2 b.



2 c.











INTERIOR OF THE CALDEIRA, GRACIOSA.



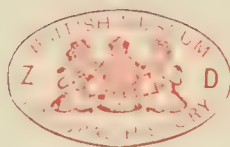
FÚFAS LAKE, SAN MIGUEL, THE HOME OF THE BULLFINCH.



EXPLANATION OF PLATE IV.

Fig. 1.	<i>Oligochroa gayneri</i> ♂.	<i>Nor. Zool.</i> viii. p. 434 (1901).	Assouan	
.. 2.	<i>Epischmia cinerosalis</i> ♀	.	.	p. 31
.. 3.	<i>Polyocha anerastoides</i> ♀	.	.	p. 31
.. 4.	<i>Scotomera wollastoni</i> ♀.	<i>Nor. Zool.</i> viii. p. 433 (1901).	Shendi	
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.. 6.	<i>Euzophera trigeminata</i> ♀	.	.	p. 30
.. 7.	<i>Heterographis rivularis</i> ♀	.	.	p. 31
.. 8.	<i>Platytes impar</i> ♂	.	.	p. 32
.. 9.	<i>Perissomastix nigriceps</i> ♂	.	.	p. 33
.. 10.	<i>Pseudosterrha gayneri</i> ♀.	<i>Nor. Zool.</i> viii. p. 433 (1901).	Shendi	p. 28
.. 11.	<i>Pericyma fasciolata</i> ♂	.	.	p. 24
.. 12.	<i>Alarona semilactea</i> ♂	.	.	p. 32
.. 13.	<i>Beralade pura</i> ♂	.	.	p. 23
.. 14.	<i>Cossus henleyi</i> ♂	.	.	p. 23
.. 15.	<i>Cupido eleusis</i> ♂	.	.	p. 22
.. 16.	" " ♀	.	.	p. 22
.. 17.	" <i>theophrastus</i> ♂	.	.	p. 22
.. 18.	" " ♀	.	.	p. 22
.. 19.	<i>Synthimia crassicauda</i> ♂	.	.	p. 25
.. 20.	<i>Tephрина disputaria</i> ♀	.	.	p. 28
.. 21.	<i>Pericyma fasciolata</i> ♀	.	.	p. 24
.. 22.	<i>Eublemma wollastoni</i> ♂.	<i>Nor. Zool.</i> viii. p. 430 (1901).	Shendi	
.. 23.	<i>Raparna minima</i> ♂	.	.	p. 26
.. 24.	" <i>bipuncta</i> ♂	.	.	p. 25
.. 25.	<i>Tephрина disputaria</i> ♂	.	.	p. 28
.. 26.	<i>Peridela sudanata</i> ♂	.	.	p. 28
.. 27.	<i>Euchloris dissimilis</i> ♀	.	.	p. 26
.. 28.	<i>Cosymbia marcida</i> ♂	.	.	p. 27
.. 29.	<i>Eublemma scitula</i> ♂	.	.	p. 25
.. 30.	<i>Synthimia crassicauda</i> ♀	.	.	p. 25
.. 31.	<i>Ilema henleyi</i> ♀	.	.	p. 23
.. 32.	<i>Arenipses sabella</i> ♀ from Merawi	.	.	p. 32
.. 33.	<i>Crypsotidia wollastoni</i> ♂.	<i>Nor. Zool.</i> viii. p. 432 (1901).	Shendi	
.. 34.	<i>Gyalasa pulverulenta</i> ♀	.	.	p. 26
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.. 40.	<i>Nephoterger ferralis</i> ♀	.	.	p. 30



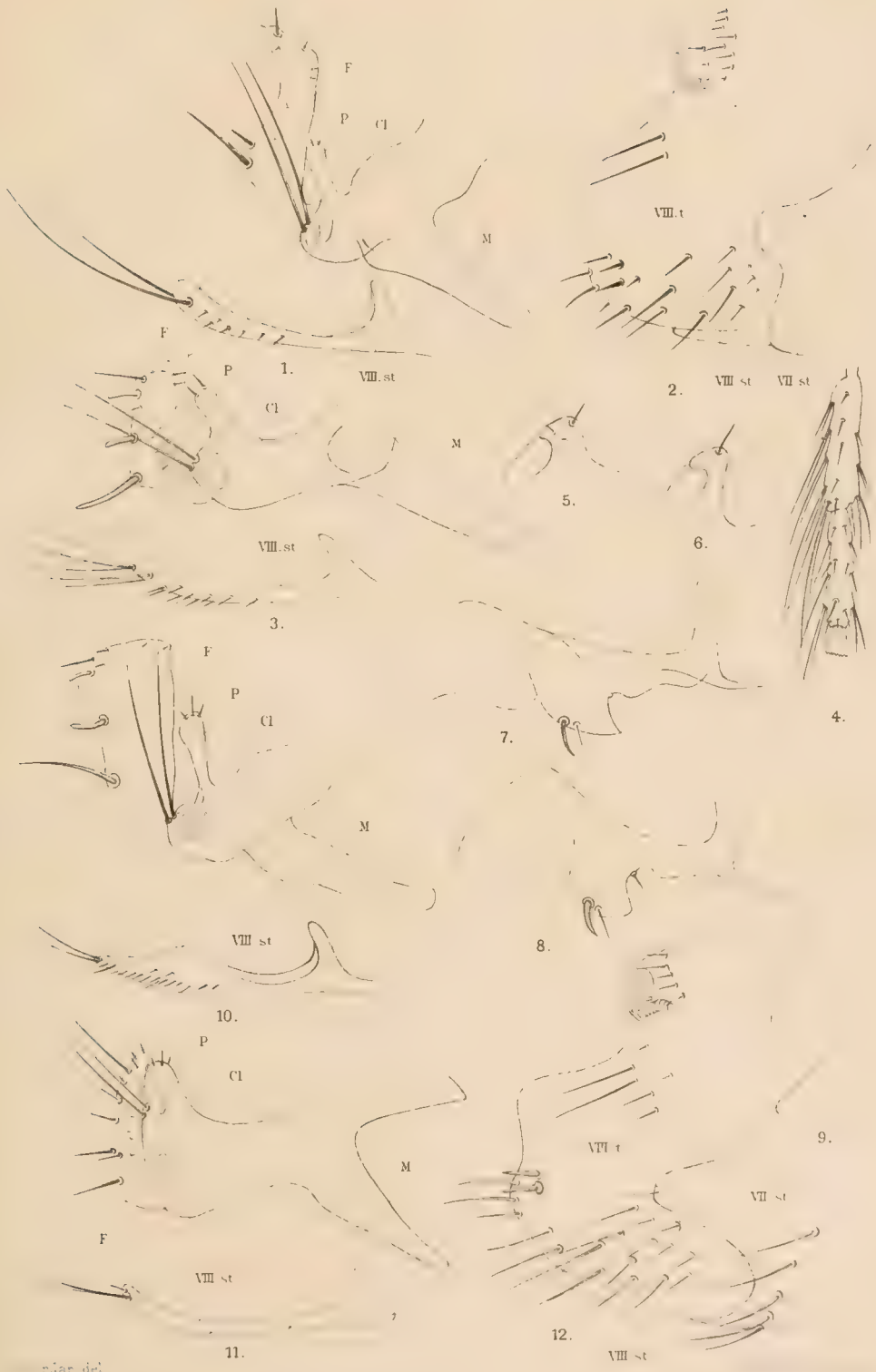


EXPLANATION OF PLATE V.

- Fig. 1. *Xanthospilopteryx catori* Jordan, *Nor. Zool.* xi. p. 443, type, Sierra Leone.
- „ 2. *Argyrolepidia aequalis integra* id., *l.c.* xi. p. 446, ♀ from Isabel.
- „ 3. *Pais ugassana* Bartel (1903), ♂ from Bihé, Angola.
- „ 4. *Lindris magnifica* Jordan, *l.c.* xi. p. 447, type, Angola.
- „ 5. *Pseudospiris jucunda* Jordan, *l.c.* xi. p. 444, type, Angola.
- „ 6. *Burgena reducta* Rothsch & Jord., *l.c.* x. p. 487, type, Kulumbangra.
- „ 7. *Caprimima caeruleus bougainvillei*, type, Bougainville.
- „ 8. „ „ *isabella* Rothsch. & Jord., *l.c.* viii. p. 422, type, Isabel.
- „ 9. „ „ *mononis* Jordan, *l.c.* xi. p. 443, type, Treasury.
- „ 10. *Clerkia miles cybdela*, type, Bougainville.
- „ 11. „ „ „ „
- „ 12. „ „ „ „
- „ 13. *Thereta polistratus* Rothschild, *l.c.* xi. p. 440, type, British New Guinea.
- „ 14. *Rothschildia tucumani* Dognin (1901), ♂ from Tucuman, type of *R. steinbachi* Rothschild, *l.c.* xi. p. 601 (1904).
- „ 15. *Melanitis ansorgei* Rothschild, *l.c.* xi. p. 451, type, Congo.
- „ 16. *Tuerta thomensis* Jordan, *l.c.* xi. p. 445, type, St. Thomé.
- „ 17. *Delias schoenbergi choiseuli* Rothschild, *l.c.* xi. p. 453, type, Choiseul.
- „ 18. *Rothia pangonica* Karsch (1898), ♂ from Usambara.



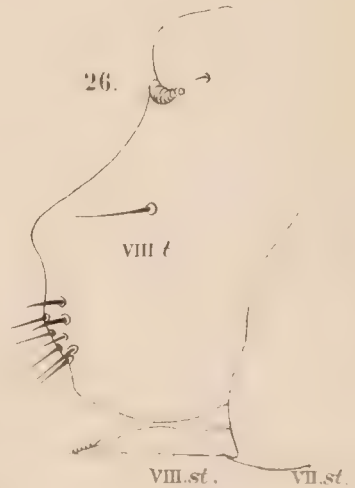
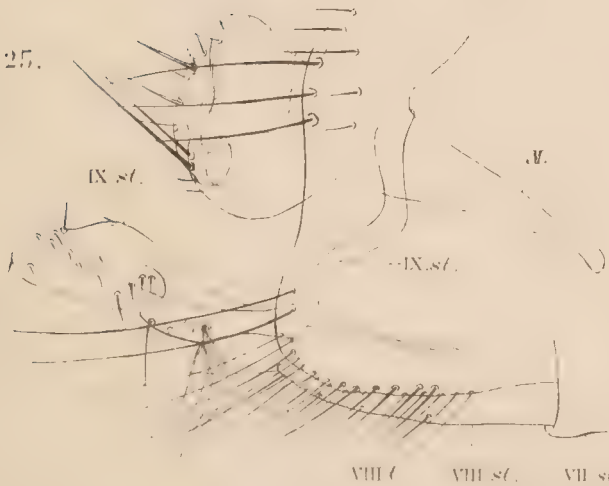
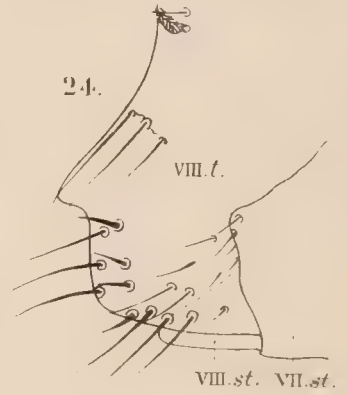
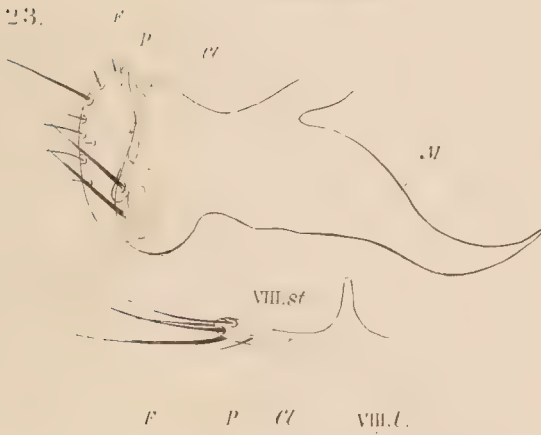
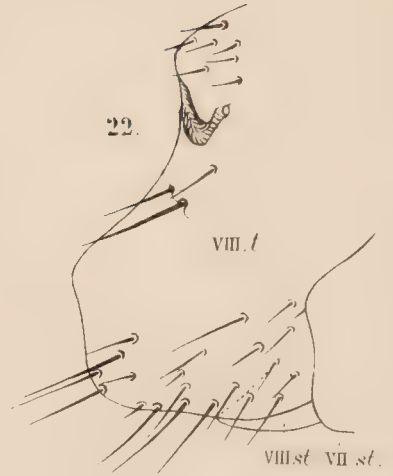




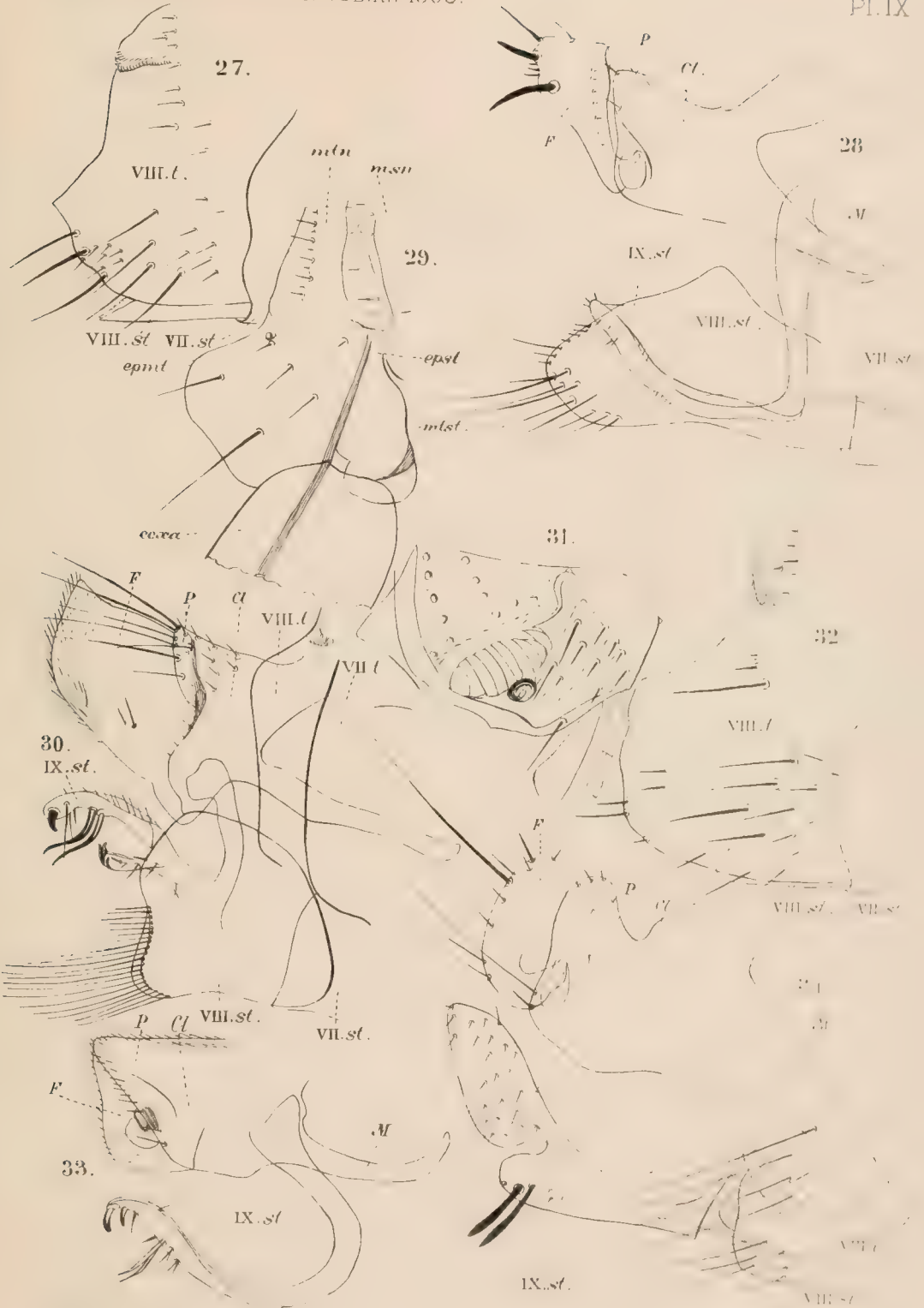




















BUIS NASUCOROTIS (Shaw).





TAXIDROMUS DORREANUS. AD.
Bani et Ghad.



EXPLANATION OF PLATES XIII. AND XIV.

Fig	1.	Sexual apparatus of ♂ of <i>Pulex roberti</i>	p. 479
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NOVITATES ZOOLOGICAE.

A Journal of Zoology.

EDITED BY

THE HON. WALTER ROTHSCILD, PH.D.,
DR. ERNST HARTERT, AND DR. K. JORDAN.

VOL. XII.

No. 1.

PAGES 1—242. PLATES I., II., III., VI., VII., VIII., IX.

ISSUED, FEBRUARY 11TH, AT THE ZOOLOGICAL MUSEUM, TRING.

PRINTED BY HAZELL, WATSON & VINEY, LD., LONDON AND AYLESBURY.

1905.

VOL. XII.

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EDITED BY

WALTER ROTHSCHILD, ERNST HARTERT, and KARL JORDAN.

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A REVISION OF THE LEPIDOPTEROUS FAMILY SPHINGIDAE.

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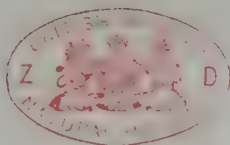
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VOL. XII.



No. 2.

PAGES 243—512. PLATES IV, V, X TO XIV.

ISSUED, SEPTEMBER 20TH, AT THE ZOOLOGICAL MUSEUM, TRING.

PRINTED BY HAZELL, WATSON & VINEY, LD., LONDON AND AYLESBURY.

1905.

VOL. XII.

NOVITATES ZOOLOGICAE.

EDITED BY
WALTER ROTHSCHILD, ERNST HARTERT, and KARL JORDAN.

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VOL. XII.

No. 3.

PAGES 513—544.

ISSUED, DECEMBER 30TH, AT THE ZOOLOGICAL MUSEUM, TRING.

PRINTED BY HAZELL, WATSON & VINEY, LD., LONDON AND AYLESBURY.

1905.

Vol. XII.

NOVITATES ZOOLOGICAE.

EDITED BY
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